EDITORIAL

Office Politics

IT'S the spirit in man—the will to do—that makes or breaks an organization in the long run. Systems and methods are useful in directing the efforts of men, but they cannot compel maximum efficiency when the will to do is lacking.

United Business Service touches on one important phase of this problem in a recent bulletin which is worth attention from automotive executives. It says in part:

"The first and most troublesome disease of business organizations is the 'office politics' that troubles every large organization as a result of individual ambition.

"This disease is like an internal cancer, invisible, but deadly. Often you do not see it or suspect its existence until you hunt for it. But it is sapping the vitality and business efficiency of the whole outfit. It thrives in secrecy and favoritism. It can be lessened by square and open dealing, by adopting tangible and measurable standards of achievement for promotion purposes, by a large measure of publicity among the members of the organization regarding what is done and why; and perhaps most of all by a personnel manager who is able to win the confidence of every employee by his honesty, sympathy and fair-mindedness.

Parts Capacity

AFTER a long period in which automotive parts and accessory manufacturing capacity exceeded demand by a considerable extent, figures showing that a group of representative plants have been operating well above normal for more than six months, come as particularly cheering information. Neal Adair, manager of the Motor and Accessory Manufacturers' Association educational department, is responsible for the good news.

Here's the data which he gives in a recent M. & A. M. A. Business Bulletin:

	Orig. eq. sold to mfgs. only	Pts. Acces. sold to mfgs. and trade	Pts. sold to mfgs. and trade
Number of co.'s reporting and average % of plant capacity in operation first 6 mos.	14—85%	1—100%	14—81%

	Acces. sold to mfgs. and trade	Parts sold to trade only	Acces. sold to trade only	Ser. Equ. sold to trade
Number of co.'s reporting and average % of plant capacity in operation first 6 mos...	9—78%	2—100%	3—75%	3—88%

The excellent showing made in the last six months by manufacturers of parts and accessories, sold only to vehicle makers as original equipment, is specially worthy of note. There has been a lot of talk in the last few years, about the difficulties of the original equipment business; about the hard times ahead for those devoting their efforts largely or exclusively to that field. Much of it has had a sound basis in fact. But these figures indicate that much of it has been idle.

Makers selling for original equipment only have had their plants at 85 per cent of capacity since the first of this year. Any plant operating at 85 per cent of capacity is experiencing good business. It is said by competent authorities that the steel business considers itself "normal" when it is operating at about 70 per cent of capacity. On that basis, parts and accessory manufacturers have been well above "normal" for the last six months.

Balance sheets bear out the indications of these figures. Equipment manufacturers in many cases have shown good profits and have every expectation of recording a good net income for the rest of the year. Even though vehicle production should fall off in the last half of the year, and parts and accessory manufacture be curtailed accordingly, the chance of operations being reduced much below the 70 per cent "normal" seem to be small. Some companies still are having trouble to make the grade, but the condition of an industry cannot be judged by its failures. It can properly be interpreted from the records of a group of representative companies such as those included in Mr. Adair's survey. Such interpretation at this time shows actual conditions to be better basically than generally thought by casual observers.

Efficiency in Research

THE cost of research and the difficulty of tracing its direct commercial application are largely responsible for the trouble experienced in getting funds for such investigations.

Engineers and research men sometimes are prone to criticize the general executive for being hard-boiled as regards research activities and to urge that they be given more latitude for experimental work without being tied down too closely to immediate commercial applications. Doubtless much of this criticism is well founded. But, before it be pushed too far, the research man must frankly face the question, "Am I conducting my research work efficiently?"

Writing in AUTOMOTIVE INDUSTRIES recently, E. P. Warner, a research engineer of standing, said:

"Design research is primarily a process of elimination by trial and error. The opportunities for genius lie, first, in thinking of things to try and, second, *in extracting from every experiment a maximum of information and inference.*"

To get the most out of the results obtained—that constitutes efficiency in research.

Our Industry Today

Sales Show Normal Decline, But Cars, Trucks, Tires and Accessories Exceed Last Year's Business for Same Period

NEW YORK, July 30—Sales in nearly all automotive lines are showing the normal ratio of decline from the brisk business during the height of the season, but cars, trucks, tires and accessories are all being disposed of at a higher rate than at this time a year ago, a condition eminently satisfactory to the industry.

Just now the center of interest is held by new models, and the price changes that accompany them. By August 1 nearly all the changes will have been announced and the cars will be on sale, when an opportunity will be given for a better line on just how good late summer and fall business will be. Many prospective buyers customarily wait to see the new models before buying.

In several outstanding instances prices are being lowered, but this is a condition that the industry has come to expect with the introduction of new models. It is unlikely that the reductions will seriously affect earnings of the companies, as the factories are being run on a higher plane of economy than ever before, and as a good volume of business can justly be expected to follow the attractive prices now being established. Of course a price war would result unfavorably, but only the most pessimistic see any signs of such a condition.

The fact that most of the price cuts were withheld until the spring selling season had passed is a source of considerable satisfaction, as otherwise the business of dealers would have been badly disrupted. As the situation stands now, dealers in virtually all the leading lines are in exceptionally good condition, with stocks low and old models pretty well cleared off the floors.

The new cars for the most part represent only minor changes in chassis design, which means that no expensive alterations in plant equipment were required for their production. The greatest changes have been in the bodies, and a continuation of the tendency toward brighter colors, less height, and smoother streamline effects is noted. Even the most conservative factories are giving way to what has been demonstrated to be the prevailing taste of the motoring public.

NEW GARDNER SEDAN

ST. LOUIS, July 27—Celebrating the 50th Anniversary of the beginning of the Gardner organization, the Gardner Motor Co., Inc., announces the introduction of a sedan on both 6 and 8-cylinder lines, which is called their "50th Anniversary Sedan." The 6-cylinder model lists at $1,595 and the 8-cylinder model at $1,995.

Insurance Plan Is Growing in Industry

Report Comes That Ford and Willys Have Projects Under Way

NEW YORK, July 30.—Indications pointing to the increasing popularity of car insurance incidental to manufacturers' financing plans became noticeable in the industry the last week.

With the Chrysler Corp. insurance plan and the General Motors Corp. idea well under way, the report became so persistent as to assume the tone of authority that Ford Motor Co., and the Willys-Overland Co., Inc., propose to establish insurance. The Studebaker Corp. already has such a plan incidental to its financing arrangement. Willys-Overland has denied the report.

B. E. Hutchinson, vice-president and treasurer of the Chrysler Corp. returned to New York today from the Pacific Coast, where he studied the operation of the Chrysler plan of uniform financing which became effective July 1. He gave out a comprehensive statement covering the situation from the Chrysler standpoint. The statement, in part, was:

Chrysler Makes Statement

Upon my return to New York I find some little discussion about the insurance feature of the Chrysler plan. The impression has been given by misinformed individuals that the Chrysler Corp. has taken advantage of its mass purchase power and has set about to provide lower fire and theft insurance rates on Chrysler automobiles.

The truth is that many months ago the Chrysler Corp. determined to find a way to control the deferred payment price of its product. It has always controlled its delivered price to which has been added freight, war tax and a nominal handling charge. But the factory has never until the new plan was inaugurated had any control over the deferred payment price of its product.

It is axiomatic in business that as you lower the price of your product you expand your market. With that as a basis we set about to find ways of effecting a uniform deferred payment rate of financing. We have no objection to dealers financing the sale of their own cars or arranging with local financing companies to handle their finance paper, but we do insist upon local rates being competitive with what we can obtain nationally.

We next began entering into negotiations for a national finance service for our dealers and uniform rates also and we were immediately advised that uniform national finance rates were out of the question unless cars sold on the deferred payment basis were insured against fire and theft under a blanket insurance policy.

The Chrysler Corp. is not in the insurance business. Its dealers are in the business of selling automobiles—not the business of selling insurance. Our dealers receive no applications for insurance. They collect no premiums. They deliver no policies.

Sales Are Stimulated

The plan has met with criticism from those who have largely misunderstood it. Such criticism disappears when the plan is understood. Some opposition has come from State insurance commissioners who have not had their attention called to the fact that the plan, being a Michigan contract, is not subject to local State laws.

Some opposition has come too from insurance agents who are under the misapprehension they are about to lose a little business. Local insurance agents are already excluded from participating in the writing of insurance on cars sold under a time payment plan. Such insurance is already controlled by the finance companies and represents the preponderance of fire and theft insurance on first year cars.

The plan has been in operation a month. It has proved the biggest stimulus to sales the company has ever experienced. The prospective purchaser sees he is assured of minimum deferred payment rates of interest. He is saved money and saving money is good business.

GENERAL PARTS CORP. BUYS THE HAYNES CO.

DETROIT, July 29—Purchase of the Haynes Automobile Co. by the General Parts Corp. has been announced by the latter company here. If a survey, to be started in the immediate future, shows favorable prospects, the manufacture of the Haynes automobile will be started under another name. With the purchase came the leasing of the service department and grounds of the company. The transaction includes the purchase of the name Haynes, it is said, insofar as its service to products made by the company is concerned. About 40 men will be employed in the service department with the additional possibility of the General Parts Corp. moving some of its other parts deparment to Kokomo, Ind., where the Haynes service is located.

FISHER BODY CORP. AT PEAK PRODUCTION

NEW YORK, July 29—"Our production is at capacity," said Fred J. Fisher, president of the Fisher Body Corp., sailing on the White Star liner Majestic with other officials of General Motors, for an inspection trip in Europe.

"We are producing about 3500 bodies daily, about 90 per cent the closed type. Indications point to this rate being continued throughout the rest of the year.

"Earnings will be substantially better than last year.

"The new cars that will be offered by the General Motors Corp. next month will establish new values in the motor car industry."

Mr. Fisher was asked if there was any truth in rumors that the finance committee of General Motors had recommended a $1 extra dividend for the next quarter. He said: "I don't like to talk about matters of that kind, but those rumors originate with bankers, and bankers generally know what they are talking about."

Pierce-Arrow to Retire Prior Preference Stock

NEW YORK, July 28—The Pierce-Arrow Motor Car Co. has completed arrangements to retire all its outstanding prior preference stock, according to announcement by Myron E. Forbes, president. The company also has paid off the last of its outstanding bank loans.

All of the prior preference stock will be paid off on Oct. 1, 1925, at $100 a share, plus the quarterly dividend of $2, which will accrue on that date. After Oct. 1, it was announced, all dividends on the prior preference stock will cease to accrue and all rights of the holders as stockholders of the company, except the right to receive the redemption price, will cease accordingly.

Certificates will be surrendered at the office of the Central Union Trust Co. of New York, South Broadway. Prior preference stock may be converted into common stock up to Oct. 1, 1925.

CHEVROLET DELIVERIES

DETROIT, July 27—More than 650 Chevrolet cars were delivered in Wayne County by Chevrolet dealers up to July 15, according to A. H. Goodman, secretary and treasurer of the Detroit Chevrolet Dealers Association. The prospects for the remainder of the month, according to present figures, will equal the first fifteen days. A marked feature of the sale of the Chevrolet is the tendency of the buyers toward the open models. The coupe, however, still leads all others in popularity.

1925 Most Significant Year in History of Automobile Industry

Expert Attributes Remarkable Conditions to Sane Methods of Production and Distribution With Resultant Stability

By C. A. VANE,
General Manager, National Automobile Dealers Association

NEW YORK, July 30—Future historians of the automobile industry will look back over 1925 as the most significant year in the history of the industry. That significance will be due to a number of factors, but largely it will be attributed to the general sanity settled over both the production and distribution ends, which imparted to the business the greatest stability it has ever known.

The entire industry is definitely moving forward and 1925 has seen the greatest evidences of its progress. Some of the things that stand out as the most important accomplishments of the year were things whose foundations were laid two and three years ago and are just now bearing fruit.

The outstanding feature of the business for 1925 *is that while we have had the greatest production of any similar period in the history of the industry, we have had no over-production—in spite of the fact that production has been larger than during some years when a smaller production was an over-production.*

No Over-Production Noted

How did it happen that such an enormous number of vehicles (1,936,623 passenger cars in the first six months of 1925) did not glut the market as a smaller number have done in former years?

Primarily because there was no overproduction at any time. Factories maintained fairly even schedules, and kept production just about apace with actual car sales. This, coupled with the fact that the production for the last half of 1924 was regulated also on the same basis, meant that there were no surplus winter stocks to move at a sacrifice.

What effect has this had on dealer conditions?

I think that the dealers finished the first half of 1925 in better condition than they ever knew before, and that is evidenced by the temper of the dealer body. There are more happy dealers today than I have ever before seen in the business.

More dealers made money in the first six months of 1925 than ever before. Some of them have made more money than they made this year, but even those are not kicking at what they have made this year. If they can hold on during the balance of 1925 to what they made in the first half of the year, they will finish in good temper.

From now until Dec. 31, the dealer's problem will be to keep his operating expenses within his income. Normally the car dealer does 65 per cent of his business between Jan. 1 and Aug. 1. That means that for the last five months of the year there is only about one-half as much sales volume to look forward to as in the first seven months. Ostensibly the dealer will have to bring his expenses into line. He must take the axe to every unproductive activity in the place. The only dollar he is justified spending is the dollar that will create income. It must create enough to pay his overhead and operating and make an extra profit of a nickel for his net.

There is every indication that the car manufacturers appreciate and understand the position the dealer is in. I do not believe that any manufacturer today is so blind to the future as to force his dealers to do the unbusinesslike. Factories realize that probably 85 per cent of the dealer's business today is replacement, that nothing that the dealer can do in the way of sales experiments will change that percentage visibly, and that money spent in trying to enlarge the volume of clean business and first time buyers beyond the 15 per cent is money wasted.

Broad Character of Business

With production stabilized and sales in a satisfactory condition, more dealers will go into 1926 with a definite sales plan and a definite profit idea than ever before. They understand, as never before, that the automobile business is an automotive business, a departmentized sales institution, handling new cars, used cars, parts and accessories and a shop, at a profit. And they are learning, better than ever before, that the answer to the used car problem is an understanding that a used car is a piece of merchandise to be bought at a price and sold at a profit. The dealer who is losing money on used cars today, in the main, knows that he is losing money when he buys it as well as when he sells it. Three years ago, the dealer didn't know until he sold it, and sometimes not then.

The last six months? A better period I think than we have known for some time. Our reports from all over the country indicate that this is a wonderful crop year. Good crops and good prices to the farmers have always meant good business all down the line and 1925 will be no exception.

General Motors Corp. Profits for First Half Of 1925 $28,271,000, Greatest in History

Attribute Earnings to Policy of Keeping Production in Line With Demand—Gain Per Unit Increases in Six Months From $76 to $118

NEW YORK, July 28—To the policy of maintaining production in harmony with retail demand, executives of General Motors Corp. attribute the remarkable financial statement just prepared to cover the first half of the year.

With no great change either in selling cost or cost of production, beyond that resulting from reduced overhead through staple factory operations and quick turnovers, profits per unit have increased from $76 to $118 in six months.

First quarter earnings of General Motors Corp. this year were approximately 8 per cent below those of the same period in 1924. Nevertheless, the earnings for April, May and June brought the total net to $28,271,000, which exceeded the earnings of the first half of 1924 and revealed earning power of approximately $115,000,000 annually.

The best year in the corporation's history was 1923 when actual net profits amounted to $62,067,526.

Deducting first quarter earnings of 1925 amounting to $17,811,232 from the $46,082,236 reported for the first 6 months shows profit for the second quarter of $28,271,000.

Year's Dividend Earned

In the first six months of this year, the Corporation earned its entire year's dividend requirements, amounting to approximately $37,000,000 on the preferred and common with a surplus of more than $9,000,000, leaving all earnings of the last six months of the year, in addition, available for surplus or distribution to common shareholders.

Net income the first half was equal to $8.19 a share on the 5,161,600 shares of common, which compares with $4.57 in the corresponding period of 1924 and $7.37 for the full 1924 year. Including the Corporation's equity in the undistributed earnings of Fisher Body in which it holds a 60 per cent interest and General Motors Acceptance, which it owns entirely, earnings available for the common for the six months amounted to $9.02 a share against $8.59 in the entire 1924 year.

In contrast to the 70 per cent gain in earnings, the sales of cars and trucks to dealers showed a gain of slightly more than 10 per cent, having been 389,095 in the six months to July 1, 1925, against 353,099 in the corresponding period of 1924. A more striking example of the wholesome effect which steady factory output has on earnings is indicated by a comparison of second quarter results. In the three months through June the corporation sold 233,780 units, realizing a profit of $28,271,004, against sales of

(*Continued on page* 191)

Willys-Overland Breaks All Records

Produce 109,394 Cars in Six Months, Within 40,000 of 1924 Output

TOLEDO, July 27—With production of 109,394 cars in the first six months of the present year the Willys-Overland Co., of this city, has broken all records for a similar period in the history of the company.

This is more than 10,550 cars increase over the first six months of 1924 and is within 40,000 of the entire 1924 production.

President John N. Willys attributed the big business of this year so far to the complete line of cars produced, the excellent response from dealers, and the big reception from the public of new models and new ideas in the line.

President Willys issued this statement:

Despite the ugly rumors of the early spring months that agriculture, our basic industry, forecast an unusually small yield in all crops of importance, the retail organization found that never had business been better.

Our car shipments the first six months of 1925 absorbed practically our entire output, and throughout this period we found that despite our sincere attempts to bring production schedules up to the insistent demand of the dealers for more cars, we could not build them fast enough.

We were constantly behind on our deliveries, and our production still is below our orders in hand.

I am firmly convinced, not only from our own sales and production records, but from the generally firm tone of business conditions that 1925 will see the "bumper" year in the automobile industry.

If I were to make a prediction on the remaining months of this year, it would be that Willy-Overland's big production schedule and selling record of the first six months' period will be amply substantiated by a similar mark in the last half of the

(*Continued on page* 191)

GOODYEAR SALES FOR 6 MONTHS HIT PEAK

AKRON, July 29—For the first six months of 1925 production and sales of the Goodyear Tire & Rubber Co. were larger than those of any like period in the company's history. Earnings before interest and other charges were $11,394,267 and net was $9,011,407. After appropriation of the raw material reserve and for dividends of $2,828,628, surplus was $25,981,355, compared with $22,798,576 on Dec. 31, 1924.

Cash in banks and on hand was reported as $11,480,889, current assets $62,898,005, current liabilities $7,858,270.

Franklin Profits for Six Months Reach $1,393,554

NEW YORK, July 29—The advance this year in H. H. Franklin Manufacturing Co. issues, carrying the 7 per cent preferred from 75 to above 95 and the common from 10 to above 42, is in accordance with improvement in earnings in recent months. For six months of this year Franklin, which manufactures the Franklin air-cooled automobile, reported net profits of $1,393,554, after all charges and taxes, equal after preferred dividends to $3.89 a share on 299,463 shares of common stock.

This six months' showing compares with a deficit after depreciation in all 1924 of $811,434, and a profit of $1,174,539 for the 1923 year.

The satisfactory showing in the first six months reflects the introduction of an entirely new line of models early this year. At that time price advances ranging from $350 to $700 were made, and was considerably less than in the corresponding period of the preceding year, the margin of profit was greater.

June shipments established a record and showed an increase of 260 per cent over June last year.

MOTOR WHEEL CORP. GAINS

NEW YORK, July 28—Motor Wheel Corp. shows, for the first six months of 1925, net income of $1,935,396, after charges and Federal taxes, equivalent, after dividend requirements, on $1,615,000 8% preferred stock, to $3.40 a share earned on 550,000 outstanding no par common shares. Net income for the June 30 quarter was $1,168,030, or $2.06 a share on the common, comparing with $767,366, or $1.49 a share, on 490,891 shares of common outstanding in the first quarter this year.

General Motors Corp. Profits $28,271,000

Increase Profit Per Unit from $75 to $118 in Six Months

(*Continued from page* 190)

133,549 in the same period last year and profit of $7,666,034.

In the second quarter of this year when the seasonal recession caused a slight decline in output from 85,583 units at the peak in April to 70,974 in June, unit profits averaged nearly $130 compared with $55 in the second quarter of 1924 when drastic curtailment of output was reflected in a decline in sales from a peak of 75,484 in March to 32,984 in June.

It is impossible to estimate probabilities in the last half of the year as the corporation's various divisions are introducing new models at substantial reductions in prices. All indications point to continued healthy demand which should be sufficiently stimulated by the increased selling power of new models at lower prices to absorb the price reductions.

Officials express the belief that earnings in the last half will not show any large recession from the record results of the first six months.

Such prosperity naturally has had a beneficial effect on the corporation's financial position, being particularly reflected in cash holdings which on June 30 this year closely approached $140,000,000 against $30,500,000 on the same date in 1924. Cash is considerably in excess of current needs and is equivalent to between $25 and $30 a share on the common stock.

Gramm & Kincaid Build 184-In. Wheelbase Chassis

LIMA OHIO, July 29—A new 184-in. wheelbase chassis suitable for bodies up to 20-passenger capacity, has been brought out by Gramm & Kincaid Motors, Inc., of this city.

The new chassis has a three-point suspended, unit power plant comprising a Continental 6-B, six-cylinder, 3¾ x 5 in. engine, multiple dry disk clutch and three speed transmission. The rear axle is a semi-floating unit with banjo housing and helical, bevel reduction gears with a ratio of 6.33 to 1. Internal four wheel service brakes are standard and the emergency is mounted at the rear of the transmission. The steering gear is a Ross cam and lever type.

Frame side rails have a maximum depth of 8½ in., a flange width of 3 in. and a thickness of 3/16 in. The tops of the side rails are 20 in. above the ground at the front door.

The chassis weight is 3800 lb. and the body allowance 3000 lb.

CHEVROLET REDUCES ON CLOSED MODELS

DETROIT, July 28—Announcement of price reduction effective Aug. 1 on all closed Chevrolet models is made by R. H. Grant, general sales manager. The revised price list follows: Coupe reduced $40 to $675; coach reduced $40 to $695; sedan reduced $50 to $775.

The benefit of the price reduction will also extend to more than 8000 persons holding Chevrolet 6 per cent purchase certificates for future delivery on closed models. The payments and interest on the certificates now will attain the total of a down payment for delivery earlier than would have been the case under the former price schedule, according to Mr. Grant.

Record production and phenomenal sale of Chevrolet passenger cars enabled the company to reduce prices earlier than had been contemplated.

Propose Air Mail to South American Cities

WASHINGTON, July 28—Air mail service between the United States, Central America, the Panama Canal Zone and South America may be inaugurated soon, it was learned at the Postoffice Department today.

An offer has been made to the department by the Scadka Lines, in which German capital is interested, to transport mail from Key West or New Orleans, over Central America, the Canal Zone, and on to Colombia, South America.

The Scadka Lines now operate a freight and passenger air service 1200 miles along the Magdalena River in Colombia. Their service has been so successful that they desire to take in additional territory by securing an air mail contract from the United States.

Complications arose in negotiations with this Government because the Scadka firm has been controlled by Germans, and the proposed flight route would take foreign operated planes over America's canal fortifications.

Post Office officials suggested that the Scadka interests incorporate under American laws with Americans holding 51 per cent of the stock of the new air line. This suggestion was promptly followed out by the company incorporating in Delaware.

The officials are now expected to resume negotiations with postal authorities. They have contended the air mail service could be operated profitably.

After an exhaustive study of the possibility of air mail service between this country and the northern tip of South America, postal officials believe it feasible.

Willys-Overland at Peak of Production

Record Was Broken in June and Schedule Calls for Fall Rush

(*Continued from page* 190)

year, and I believe that all other industries will show like results.

Employment reports in Toledo for the last two weeks have shown more than 2000 workers added to the forces here, bringing the total to more than 24,500 employed in 51 reporting plants. This is about 90 per cent better than at the same time last year.

During June the Willys-Overland plant here broke its record for that month and officials say that schedules call for about 17,000 cars a month at the present time.

Reports from sales field, both domestic and foreign, are most encouraging.

Many of the subsidiary lines of manufacture in the automotive field here including malleable castings, steel work, machine tools, brass and bronze, and parts and accessories have noted a strengthening of demand in the last two weeks.

Rickenbacker Gains 400 Per Cent Over June, 1924

DETROIT, July 28—Rickenbacker passenger car shipments during the month of June exceeded those of June, 1924, by more than 400 per cent, according to Capt. E. V. Rickenbacker, vice-president in charge of sales.

The reception by the motoring public of the new models recently introduced has been shown in recent orders and especially for July, which, according to present indications, will surpass June and be the best month in the history of the company.

Since the first of the year, Rickenbacker shipments have shown a steady increase over those for the same period a year ago, causing officials of the company to predict that the latter part of the year will be equally as good as the first six months.

TO MAKE TRACK-LAYER

SAN FRANCISCO, CAL., July 28—A corporation has been formed by a group of San Francisco capitalists to manufacture a track-laying attachment for tractors which will convert any tractor into the caterpillar type. The incorporators are Herbert Fleischhacker, William W. Crocker, John S. Drum, J. D. Grant, Joseph Sloss, D. H. Botchford, John Franco, Frank L. Ditzler, S. F. B. Morse, E. F. Burrell and H. C. Montgomery. The corporation is closed and all the stock will be held by the incorporators, virtually all of whom are interested in the largest land and industrial developments now going on in California.

Rubber Breaks, but Market Is Critical

A. L. Viles, Association Leader, Sees No Relief and British Action Is Doubtful

NEW YORK, July 30—Although the price of crude rubber has broken there is no marked change in the condition of the industry as a whole and the situation continues to be a critical one, according to A. L. Viles, secretary and general manager of the Rubber Association of America.

The memorandum presented by the Rubber Association to Secretary of State Kellogg, and later to the British foreign office has had the effect of bringing together Ambassador Houghton and Foreign Secretary Chamberlain, but any action by the British government appears unlikely, according to the London and New York viewpoint.

The three rubber-laden ships due in New York tomorrow with 6500 tons of crude rubber for those who have sold rubber for July delivery will have no effect on the industry as a whole, Mr. Viles said.

The Rubber Association executive was inclined to smile at the report brought to New York by John C. Couzens, base manager of the Hamilton Rice expedition to the Amazon. Mr. Couzens was quoted as having said that there is plenty of rubber for sale on the Amazon with the price 11 cents a kilogram at Para and 15 cents at Manaos.

Anticipate No Action to Remove Restrictions

LONDON, July 28—No immediate change in the Stevenson rubber restriction scheme is believed likely.

Ambassador Houghton has made an impression upon the British authorities by his presentation of the American case against the present inflated prices, but L. C. Amery, secretary for the colonies, in the House of Commons, asserted that the Stevenson scheme was not responsible for the high prices, and was backed up by J. H. Thomas, his predecessor in office.

Mr. Thomas spoke of "the very clever propaganda taking place in this country which is calculated to deceive quite innocent people who wanted to do the right thing," and then reminded the House that America consumes 75 per cent of the rubber produced.

ANNOUNCE 1926 CLEVELANDS

CLEVELAND, July 28—The Cleveland line for 1926 consists of three closed and three open models on the Special Six chassis and a sedan and a touring on the smaller Standard Six chassis. Prices remain unchanged, as do the chassis and bodies, with the exception of minor improvements.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

Midsummer dullness continues to dominate the business situation, although increased activity in some lines was reported last week. Firmness in stock and commodity prices has strengthened optimism regarding the outlook for an autumn revival.

The outstanding feature of last week's business news was the reduction of 751,000 bales in the official cotton crop forecast, based on condition July 16. The present outlook is for a crop of only 13,588,000 bales, as against last year's crop of 13,628,000 bales. Spot cotton prices in New York at the end of the week were nearly 2 cents a pound higher than before the publication of the report.

A further small seasonal decline in industrial production is shown by the report of the Federal Reserve Board for June and early July. The index of production in basic industries declined 1 per cent in June, but was 17 per cent above the low point of last summer. Declines took place in factory employment, pig iron and steel ingot production, newsprint and petroleum output and cotton consumption, while freight shipments, volume of wholesale trade, wholesale prices, and the production of bitum nous coal, sole leather and wheat flour increased.

Stocks of domestic crude oil held by pipe lines and tank farms east of the Rocky Mountains declined 2,033,000 barrels in June. Production of crude petroleum in the week ended July 18 averaged 2,115,150 barrels a day, as against 2,153,000 barrels in the preceding week.

Car loadings in the week ended July 11 numbered 982,809, as against 909,983 in the corresponding period last year and 1,019,809 two years ago. Nearly all reports of railway operations in June so far available show larger earnings than last year. Passenger traffic in the first four months of 1925 was smaller than a year earlier by 23,000,000 passengers.

Business failures reported by Bradstreet's for the week ended July 23 number 336, comparing with 348 in the preceding week and 350 in the corresponding period last year.

Fisher's index of wholesale commodity prices was virtually unchanged last week, standing at 160.4 as against 160.5 a week earlier.

Earning assets of the Federal Reserve banks declined $28,600,000 during the week ended July 22, with decreases of $12,200,000 in discounts, $6,800,000 in open market purchases and $9,200,000 in holdings of Government securities. The circulation of Federal Reserve notes declined $21,800,000, total deposits $32,000,000 and total reserves $500,000. The reserve ratio rose from 76.1 to 77.1 per cent.

Loans of reporting member banks increased $6,000,000 during the week ended July 15, with declines of $8,000,000 in loans secured by Government obligations and $28,000,000 in loans secured by stocks and bonds more than offset by a gain of $42,000,000 in "all other" loans. Investments declined $15,000,000, while borrowings from Federal Reserve banks increased $13,000,000 and net demand deposits $97,000,000.

Call loan rates moved within narrower limits last week, the range being 3¾ to 4½ per cent, as against 3½ to 5 per cent a week earlier. Time loan rates were firmer and on Monday of this week advanced to 4⅛ to 4½ per cent. Commercial paper was unchanged.

MOTOR STOCKS

Highest Levels Ever Reached on Street Bring Evidence of U. S. Prosperity

NEW YORK, July 30—In a week marked by further advances in stock prices to the highest levels ever recorded on the New York Stock Exchange, and accompanied by concrete evidence of the well being of the country, Wall Street has come to a pause. The favorable developments now coming to hand evidently were the basis for the advancing markets of recent weeks. It remains to be determined whether the public will follow the lead of professional operators thereby making a further advance possible or whether it will stand aloof.

There is a tendency in some quarters to compare the present with the situation of a year ago. The advance in prices last June and July had, indeed, been extensive. It was to be continued by the action of the New York Federal Reserve Bank in August in reducing the rediscount rate to the lowest level ever quoted, 3 per cent. In that month, too, came the full realization of the unusually favorable crop position of this country, with bountiful harvests assured and a shortage abroad. No such situation exists now. Money gives no indication of advancing sufficiently to make credit onerous but assuredly there is little possibility of any reduction of the rediscount rate in the immediate future. Nor is our crop position at all analogous to that of a year ago. So Wall Street is asking whether the present undeniably high price levels have not rather fully "discounted" any immediate prospects for industry.

Motor Averages High

Remembering that only so late as last March the averages of the motor group, for instance, were approximately 84 and now are 118, it is apparent that the known improvement in that industry must have been fairly reflected in the price advance. Not even the stocks in the "manufacturing" group have advanced so much. Manifestly there is much warrant for the cautionary attitude which the financial community is exhibiting, at the moment. It does not by any means indicate any unfavorable change in the fundamental position of the country but it does reflect the possibility of a technical correction of the market structure.

General Motors and Fisher Body were the features of the motor group in the week's speculative activities. The former published a highly favorable earnings statement and this was followed by reports that Fisher Body minority holdings were to be taken over by the larger company. General Motors owns 60 per cent of the 1,440,000 shares

(*Continued on page* 193)

S. A. E. Prepares for Production Meeting

Program in Cleveland, Sept. 14-16 Includes Papers by Notable Authorities

CLEVELAND, July 30.—The annual production meeting of the Society of Automotive Engineers will be held here September 14-16, in cooperation with the American Society for Steel Treating. John Younger, Editor of Automotive Abstracts, will act as chairman.

The program will be as follows:

Bringing Machine Tools up to the Level of Cutting Tools—By Col. J. B. Dillard, general superintendent Cleveland Twist Drill Co., Cleveland.

Training Foremen—By Louis Ruthenburg, general manager, Yellow Sleeve Valve Engine Co., East Moline, Ill.

Training Employees in Production Work—By Mrs. Lillian Gilbreth of the Frank Gilbreth Co.

Several others have been asked to deliver talks but their acceptances have not yet been received at the S. A. E. offices.

J. A. C. Warner is now in Detroit and is going from there to Cleveland to work with Mr. Younger on the completion of the program.

Mr. Johannson, of the Ford Motor Co., will offer a paper on Gages and Inspection.

P. L. Tenny, engineer, Muncie Products Division, General Motors Corp., will present a wealth of interesting information at the Gear Session.

There will be a smoker and frolic Tuesday evening and a dance Wednesday night.

Motor Stocks

(*Continued from page* 192)

of Fisher Body stock and the Fisher Brothers themselves own a considerable proportion of the remainder. Some months ago the old Fisher Body stock of $100 par value was exchanged for new stock of a par value of $25 on the basis of four shares for one. This new stock is selling only slightly below General Motors. General Motors pays $6 a share against $5 for Fisher Body and the gossips have it that General Motors will declare an extra of $1 per share in each of the next two quarters. Fisher could also pay extras, as the company is earning at the rate of $14 per share. It is said in well informed quarters that such an exchange is likely during the next two years but no immediate action is expected.

The favorable position of the tire and rubber companies was emphasized by the six months' report of the Goodyear Tire and Rubber Co., showing consolidated net income of $6,011,407 after interest, etc., and allowing $3,000,000 for a raw material reserve. There was little of interest elsewhere in this group. The advance in United States Rubber naturally enough attracted a large volume of profit, taking sales with a resultant recession in price. Elsewhere movements generally were narrow and without special significance.

GOODYEAR SETS ASIDE RAW RUBBER RESERVE

AKRON, July 29—The high cost of crude rubber, due to restricted output, has caused the Goodyear Tire and Rubber Co. to set aside a "special raw-material reserve" of $3,000,000, which will be used as a protection against a possible decline in values. This was disclosed with the issuance of the company's semi-annual report, which showed that production and sales for the six months ended June 30 were larger than those of any like period in the company's history. Automotive Industries presents these figures elsewhere.

The appropriation of the raw material reserve out of the last six months' earnings was voted chiefly as a precaution, Mr. Wilmer said, as the company's present inventories and commitments assure it of all the rubber it requires for the balance of the year at prices considerably under today's market.

Seiberling Rubber Co. Starts Huge Addition

AKRON, OHIO, July 29—Contrast has been awarded by the Seiberling Rubber Co. for construction of a new building, which will enable a production increase of nearly 50 per cent in tires and tubes.

The building, 150 x 240 feet, will cost more than $200,000. It will be used for curing, stripping and finishing. About 500 additional workers are to be employed, upon completion of the building.

This will be the first large expansion program undertaken by the Seiberling Co. since F. A. Seiberling, its president, purchased the old Portage Rubber Co. four years ago. It was made necessary, according to officials, because of the rapid growth of the company in the last few years. For some time production has been behind orders, due to insufficient factory floor space and machinery.

Sales of the company for July were approximately $1,500,000, as compared with $1,000,000 for June.

Present production is 3300 tires a day against 2000 six months ago. About 4000 inner tubes a day are being manufactured. The company is operating full time on a 24 hour basis.

AJAX RUBBER REPORTS

NEW YORK, July 28—Ajax Rubber Co., Inc., for six months ended June 30, 1925, reports net profit of $262,394, after depreciation, interest, federal taxes etc. This is equivalent to 52 cents a share earned on 506,000 shares of no par capital stock, compared with $143,517 or 33 cents a share on 425,000 shares in first half of 1924.

American Cars Hold Popularity Abroad

Reports to Bureau of Foreign and Domestic Commerce Show Sales Are Increasing

WASHINGTON, July 30 — Reports from the foreign offices of the Bureau of Foreign and Domestic Commerce covering a sales survey of the second quarter of this year clearly indicate that during that period when economic and seasonal conditions have been generally somewhat unfavorable, the popularity of American cars has continued to increase. The following excerpts accurately picture foreign automotive market conditions which prevailed in a number of leading countries during the second quarter and offer a forecast for the third quarter.

AUSTRIA. There were no significant changes in automotive conditions during the second quarter. Automobile sales were fairly satisfactory but confined mostly to foreign makes. Dealers handling American cars have found the present allotment of 25 cars per month from the United States entirely too small. Even under present economic conditions these dealers will probably require from 40 to 50 import licenses per month in order to meet the demands of their buyers.

BELGIUM. Automobile sales in Belgium have been seriously affected by the business crisis which has continued unabated since the first of the year. France has been the principal supplier of this market with the United States second and Italy a poor third.

DENMARK. Hopes which had been expressed in the first quarter that the succeeding quarter would find an improvement in Danish automotive sales did not fully materialize. An increase in the turn-over tax for cars selling over

(*Continued on page* 197)

American Rubber Growing Hindered by Labor Problems

AKRON, July 27—With larger acreage leases expected to be allowed in the near future by Island legislators, labor remains the only bar to rubber growing on a large scale by American interests in the Philippines, according to F. A. Seiberling, president of the Seiberling Rubber Co., and well known leader in the industry, in an exclusive interview today. Solution of this problem, he points out, lies in suspension of the restriction against contract labor for at least ten years. Use of Chinese coolies, good workers and obtainable at low wages, would enable planters in the Philippines to compete successfully with British rubber plantations in the Far East, operated with cheap native labor.

Men of the Industry and What They Are Doing

Hannum Is Banqueted

George H. Hannum, former president of the Oakland Motor Car Co. and president of the Saginaw Products Co., a division of General Motors, was guest of honor at a luncheon at the Milwaukee Athletic Club, given by Frank D. Chase, Chicago architect, to introduce Mr. Hannum to a number of Milwaukee business men. Mr. Hannum has been elected president of the Hannum Manufacturing Co. of Milwaukee, which will occupy the plant of the Lavine Gear Co. Associated with him in this project are Herman Uihlein and T. R. Johnson, formerly of Saginaw, Mich. The company will make a new steering gear designed especially for use on automobiles with balloon tires.

Vavon Here from Paris

J. A. Paul Vavon, directing engineer of the Andre Citroen Co. of Paris, France, returned to Paris after spending a week in Detroit conferring with the Continental Motors Corp. for the requirements of his firm for next year. Mr. Vavon stated that conditions in France were very bright, and it was his belief that France will import more goods from the United States during the next eighteen months than in any previous period of similar length.

McDarby Is Promoted

N. E. McDarby has been appointed assistant sales manager of the Auburn Automobile Co. McDarby for six years was advertising manager and assistant sales manager at the Moon factory and is a distinct addition to the sales force at Auburn.

R. S. Wiley, who has been assistant sales manager of the Auburn company, has been appointed general manager of export, in addition to his other duties.

Kolb New England Manager

F. J. Kolb has been appointed vice-president and general manager of the New England branch of the Selden Truck Corp., with offices in Boston. Mr. Kolb has been at the home office at Rochester for the past eight years, and with his wide experience and knowledge of Selden methods and policies, is especially well qualified to undertake the management of the New England branch.

Karlson Visits Europe

K. Edwin M. Karlson, factory manager for the Cleveland Automobile Co. of Cleveland, manufacturer of the Cleveland Six, is visiting in Europe. Mr. Karlson is combining business with pleasure, spending a short time in rest and recreation at his old home in Stockholm. He will visit various distributors throughout the continent, handling Cleveland Six motor cars.

GENERAL MOTORS GROUP IS SAILING FOR EUROPE

NEW YORK, July 29—"We are going overseas to ascertain from actual field investigations the outlook for the automotive business in Europe," said Alfred H. Swayne, chairman of the General Motors Acceptance Corp. and vice-president of General Motors, sailing on the White Star liner Majestic. Others in the group included Donaldson Brown, director of General Motors; J. D. Mooney, president of the General Motors Export Co.; L. R. Beardsley, secretary of General Motors Corp.; L. J. Pratt and C. S. Mott, a director of General Motors.

"While perhaps there is a slight lull in retail sales," Mr. Swayne said, "the reports from dealers indicate there has seldom been in past years such a genuine interest on the part of the buying public. If current sales of General Motors to the public may be taken as a representative index, our sales approximate the highest level reached in the corresponding period of past years.

"Our forecast indicates that business the balance of the summer will be good, and fall should see an unusually brisk demand for motor cars.

"The position of both manufacturers and dealers is much better than last year. Stocks of unsold new cars are small, and the used car situation is greatly improved. With economic conditions indicating a favorable general business situation for the balance of the year, the prospect of the automobile industry as a whole is very good."

Sam Miles Recovering

Sam A. Miles, veteran show manager of the National Automobile Chamber of Commerce, is very much improved at his home in Christmas Cove, Me., following an operation. He is again taking an active part in the plans for the New York and Chicago shows of next winter and for the Chamber's exhibit at the Sesquicentennial Exposition in Philadelphia next year.

Rubin Becomes Salesman

Louis H. G. Rubin, after 24 years service with the Chilton Class Journal Co. in New York City, has resigned, effective Aug. 1, to become a photo-engraving salesman for the Triangle Engraving Co., 229 West 28th Street, New York City. For several years Rubin has been a member of the advertising and production department of the Chilton Class Journal Co.

Norton with Belle City Co.

F. Lee Norton has been chosen president of the Belle City Manufacturing Co. of Racine, Wis., succeeding the late John Reid, Jr. The Belle City Manufacturing Co. makes threshers, silo fillers and track pulls, and the plant output is being marketed largely by Ford dealers throughout the country.

Lycoming Motors Changes

F. M. Bender, formerly chief engineer of the Lycoming Motors Corp., Williamsport, Pa., is now assistant general manager.

E. D. Herrick, formerly assistant chief engineer, has become chief enginner, and J. M. Stout, formerly chief tool designer, is assistant chief engineer.

Walter Leaves Reo Staff

A. J. Walter, known to his Lansing, Mich., automotive associates as "Ace," has resigned his position as retail sales manager of the Reo Michigan Sales, Inc., to enter the automobile insurance field representing the Motor Insurance Exchange of Detroit in Lansing.

Findlay Joins Genesee-Durant

Victor H. Findlay is the new manager of the Genesee-Durant Co., Flint, Mich. He succeeds W. S. Cook. Previous to being associated with the Durant Motor Corp., Mr. Findlay was associated with the Studebaker Corp.

Morrison with "Norwesco"

R. A. Morrison, who for many years was with the American Lead Pencil Co., Hoboken, N. J., has been placed in charge of all research work for the Northwestern Chemical Co., Marietta, Ohio, manufacturer of "Norwesco."

Kelsey Seriously Ill

John Kelsey, president of the Kelsey Wheel Co., Detroit, is at Rochester in the Mayo Brothers' Hospital undergoing an operation for ulcers of the stomach. His condition is said to be serious.

Neth at Export Office

William Paul Neth has been named to take charge of the New York export offices of Gram & Kincaid Motors, Inc., Lima, Ohio, manufacturer of trucks and coaches.

Davey Writes Bosch Ads

R. S. Davey has been appointed to succeed G. W. Sherwin as advertising manager of the American Bosch Magneto Corp., at Springfield, Mass.

Aluminum Co. Not Departing for Canada

Extend Works Because of Excellent Water-Power Site—Steel Market Unchanged

NEW YORK, July 30—Automotive purchasing agents were chiefly interested this week in the possible long-range effect on the aluminum market which the proposed construction of a new Canadian plant by the Aluminum Co. of America may have. While no one at the New York offices of the sole domestic aluminium producer is authorized to say anything for publication in connection with the Canadian expansion project, it may be stated that there is not a vestige of truth in the newspaper reports that the Aluminum Co. plans to move its headquarters from the United States to Canada.

If someone were to infer from the Standard Oil Co.'s development of oil properties in Mexico that it would turn its back on the United States and move its interests to Mexico City, it would be on a par with the interpretation which Montreal correspondents have placed upon the Aluminum Co.'s decision to avail itself of the opportunity to secure one of the world's few excellent water-power sites for the construction of additional reduction works.

To Spend $100,000,000

In fact, this move is merely the carrying out of a policy long ago established by the Aluminum Co., and which first came to the consuming public's notice when the company acquired a controlling interest in one of the large Norwegian plants, also possessed of superior hydro-electric resources. If the estimate that the Canadian developments will involve an expenditure of $100,000,000 is correct, it may be said that the company's investment in its American plants is considerably in excess of that sum, and, aside from this, the American market is by far the largest in point of consumption.

Last year's domestic production and consumption reached an estimated total of 72,000 tons, denoting an increase of 12 per cent over the preceding year's record. This latest development in connection with the Aluminum Co.'s activities is chiefly of interest because it emphasizes that this corporation has become a world institution, much on the order of the Standard Oil Co.; and in seeking to form an opinion on the aluminum market outlook, consumers must bear in mind that domestic conditions are not always the sole influence.

Steel market conditions are but little altered. Black sheets have firmed on a 3.15c., Pittsburgh, basis, and the undertone of both sheet and strip markets is growing stronger.

Pig Iron—While blast furnace interests prophesy an upward movement in the early fall, the market so far gives little indication of a broadening in the demand.

Aluminum—The market remains pegged at unchanged price levels. Arrivals from abroad are normal. Remelted aluminum is in good demand.

Copper—Producers intimate that they would not be surprised if a slight reaction were to follow on the aftermath of recent advances. They are confident, however, that the bulk of the gain will stand the market's acid test.

Tin—The market is narrow and under the influence of economic conditions in England.

Lead—Lead is once more considered in so scant supply that certain producers are rationing their customers. Prices are very irregular.

Zinc—Statistics favor sellers, a moderate decline in world output being noted.

MOTORS HIT CARS IN MORE WAYS THAN ONE

MILWAUKEE, July 27—Continued reduction in the number of passengers carried by street cars is being caused by the increased use of private automobiles, a report made to the Wisconsin Railroad Commission by various traction companies in the State shows. The report, which is for the year 1924, cites the number of passengers carried in that year as 264,725,637, or more than 100 rides for each person in Wisconsin. In 1923 the total was 276,460,074, while in 1920, a record year, it was 287,905,241. Corresponding reductions in revenue are also indicated in the report which shows that the traction industry in Wisconsin earned less than 2 per cent on property investment.

STOCKHOLDERS FOR MERGER

PITTSBURGH, July 30—Stockholders of the Aluminum Co. of America, meeting in this city, approved the proposed merger of the company with the Canadian Manufacturing and Development Co. The consolidation was also approved by the stockholders of the Canadian company. It is now understood that the proposed meeting of Aluminum Co. stockholders called for September 9 will probably not be held on that date.

On Monday, the stockholders of the Aluminum Co. approved a reduction in the par value of the company's stock from $100 to $5 a share. The stock of reduced par value will be exchanged for the capital shares of the new company which will be formed as a result of the merger agreement.

NEW $3,295 MARMON COUPE

INDIANAPOLIS, July 27—A new four-passenger, two door Victoria coupe listing at $3,295 has been added to the Marmon line.

Automobile Men of 50 Nations Due Here

Second Motor Congress in January to Be Devoted to Sales, Advertising and Service

NEW YORK, July 28—Invitations are being mailed this month to all countries of the globe inviting automobile men to attend the second World Motor Transport Congress which will be held in New York Jan. 11-13, 1926, during the National Automobile Show.

Assurances of participation have already been received from 50 countries speaking 16 different languages.

The National Automobile Chamber of Commerce is the host on this occasion which is a continuation of the first congress held at Detroit in May, 1924.

The economics and utility of motor transport were the chief topics at the first conference. This time emphasis is to be placed on sales, advertising and service methods.

Exports Gain Heavily

During the first five months of this year there were 228,537 American cars and trucks shipped to 101 countries and colonies of the globe, a record far exceeding any previous mark in the export business. It is felt that most parts of the world have passed the preliminary stages in motor transportation and are ready to study up-to-date selling methods.

The congress is to be conducted on the basis of exchange of experiences. The American manufacturers hope to learn a great deal from visitors from abroad and in return they will provide complete exhibits of the way in which motor transportation is merchandised in this country.

The meeting is to be an open one to dealers, manufacturers, engineers and others in foreign countries who are interested in the American automobile industry. Special invitations are being sent to delegates who attended in 1924.

Ship Trucks by Boat, Detroit to Copenhagen

DETROIT, July 28 — The first motor trucks to be shipped by boat direct from Detroit, Mich., to Copenhagen, Denmark, left that city Saturday on the steamship "Anders."

These motor trucks are a shipment of Fisher fast freight 1½-ton chasses from the Standard Motor Truck Co. of Detroit, to its distributor in Copenhagen, Denmark.

There is a net saving of 3 days in time and of 48 per cent in cost by being able to make the shipment direct by boat, according to Raymond Fisher, traffic manager of the Standard Motor Truck Co.

British Automotive Expert Is Optimistic

Col. Hacking Tells N. A. C. C. Directors Business Gained 100% in Three Years

NEW YORK, July 29—The current state of automotive business in Great Britain was described at a luncheon here this week by Col. Alfred Hacking, secretary of the Society of Motor Manufacturers and Traders of London, who is making a survey of the American automobile business.

The luncheon was given by the National Automobile Chamber of Commerce. Frederick J. Haynes, president of Dodge Bros., Inc., who presided, extended an invitation to British car and truck manufacturers to visit America at the time of the National Automobile Show and the World Motor Transport Congress in New York, January 9, 1926. He declared that the motor car had won its way to world-wide favor because it had proved a transportation necessity, and he predicted that it would prove a more potent force in bringing the peoples of the world together than the League of Nations.

100% Gain in Three Years

Col. Hacking said that the automobile was making striking progress in Great Britain, the business having grown 100 per cent in three years. Engineering opinion was about equally divided between preference for light high speed motors and the heavier American type, but he thought there was no chance for a change in the present R. A. C. bore rating of engines.

He declared that the McKenna duties of 33 1/3 per cent on imported cars would be maintained for at least four years.

A reimposition of a gasoline tax Col. Hacking thought unlikely, as the British authorities found difficulty with administering the levy.

With regard to the rubber situation, Col. Hacking said there was little chance of a radical modification of the Stevenson restriction act, as many took the position that high rubber prices were greatly helping England to pay her war debt. But his association as well as others in allied fields had lodged emphatic protests against the present state of affairs. They favor cheaper rubber.

Questioned regarding the time sales situation in England, Col. Hacking said that about half the cars sold there now were on deferred payments. The sales are financed usually through subsidiaries of insurance companies, and the approved terms are 25 per cent down and the balance in twelve installments. "Most good concerns," he said, did not approve of more liberal terms.

Among those at the luncheon were H. H. Rice, assistant to the president, General Motors Corp.; M. C. Reichert, export manager, Studebaker Corp. of America; A. L. Viles, general manager, Rubber Association of America; Coker Clarkson, general manager, Society of Automotive Engineers; Alfred Reeves, general manager, National Automobile Chamber of Commerce; Herman Deuster, secretary of the foreign trade committee of the Motor & Accessory Manufacturers Association; other representatives of manufacturers and associations, and editors of automotive trade publications.

Alfred Hacking and Alfred Reeves

Luxor Cab Corp. Receives New Capital for Expansion

NEW YORK, July 29—With the admission of new interests to the Luxor Cab Manufacturing Corp., manufacturers of the Luxor Taxicab, new capital has been supplied which places the company on a firm financial foundation and in a position to handle the enlarged volume of business that appears to be the prospect for the coming year. The Luxor company now manufactures its own taxicabs completely, in factories acquired at Framingham, Mass. Sales offices are maintained in New York City.

The new personnel consists of Allie S. Freed, president; Joseph Sapinsky, vice-president; Jacob Tepper, treasurer, and David Verschleiser, secretary. The above are also directors of the corporation.

The company is concentrating on two models of taxicabs, a limousine and landaulet, selling at $2,693, and $2,793, respectively. Cabs may be purchased on the down payment basis, the balance to be taken care of over an 18 months' period.

FINANCIAL NOTES

Moon Motor Car Co., reporting as of June 30, 1925, shows total assets of $3,591,305. Current assets were $2,508,539 and current liabilities, including reserve for income and profit taxes for first half of 1925, amounted to $640,669. Capital stock and surplus totaled $2,789,561.

Balance sheet of Moon Motor Car Co. as of June 30, 1925, follows:

Assets—Cash, $461,474; notes and accounts receivable, $895,603; sundry current assets, $10,580; inventories, $1,140,882; prepaid expenses, $15,578; investments, $8,500; real estate, equipment, patterns, etc., $583,688; goodwill, $475,000; total, $3,591,305.

Liabilities — Accounts payable, $460,017; deposits, $22,492; accrued payrolls, $10,934; reserve for income and profit taxes 1924 and first half of 1925, $147,225; depreciation reserve, $161,076; capital stock and surplus (represented by 180,000 no par shares) $2,789,561; total, $3,591,305.

The Hayes Wheel Co. has declared a regular quarterly dividend of 75 cents per share and an extra dividend of 25 cents per share on its common stock, payable on Sept. 15 to stockholders of record Aug. 31. A regular quarterly dividend of 75 cents and an extra dividend of 25 cents were declared also for payment Dec. 15 to stockholders of record Nov. 30. A dividend of $1,87½ per share was declared on the preferred stock for both quarters.

The Wright Aeronautical Corp. reports for the quarter ended June 30, 1925, net income of $197,613 after charges, equivalent to 79c. a share on the 249,390 no par capital shares outstanding, as compared with $111,470 or 44c. a share on the corresponding quarter a year ago. For the six months ended June 30, net income amounted to $355,251 or $1.42 a share as compared with $176,649 or 70c. a share in the similar time of 1924.

The Electric Auto Lite Co. reported yesterday net earnings of $775,025 for the second quarter, after depreciation, against $304,675 in 1924, an increase of 154 per cent. After estimated Federal taxes, the company earned more than $2.71 per share in the second quarter and over $4.96 per share in the first half.

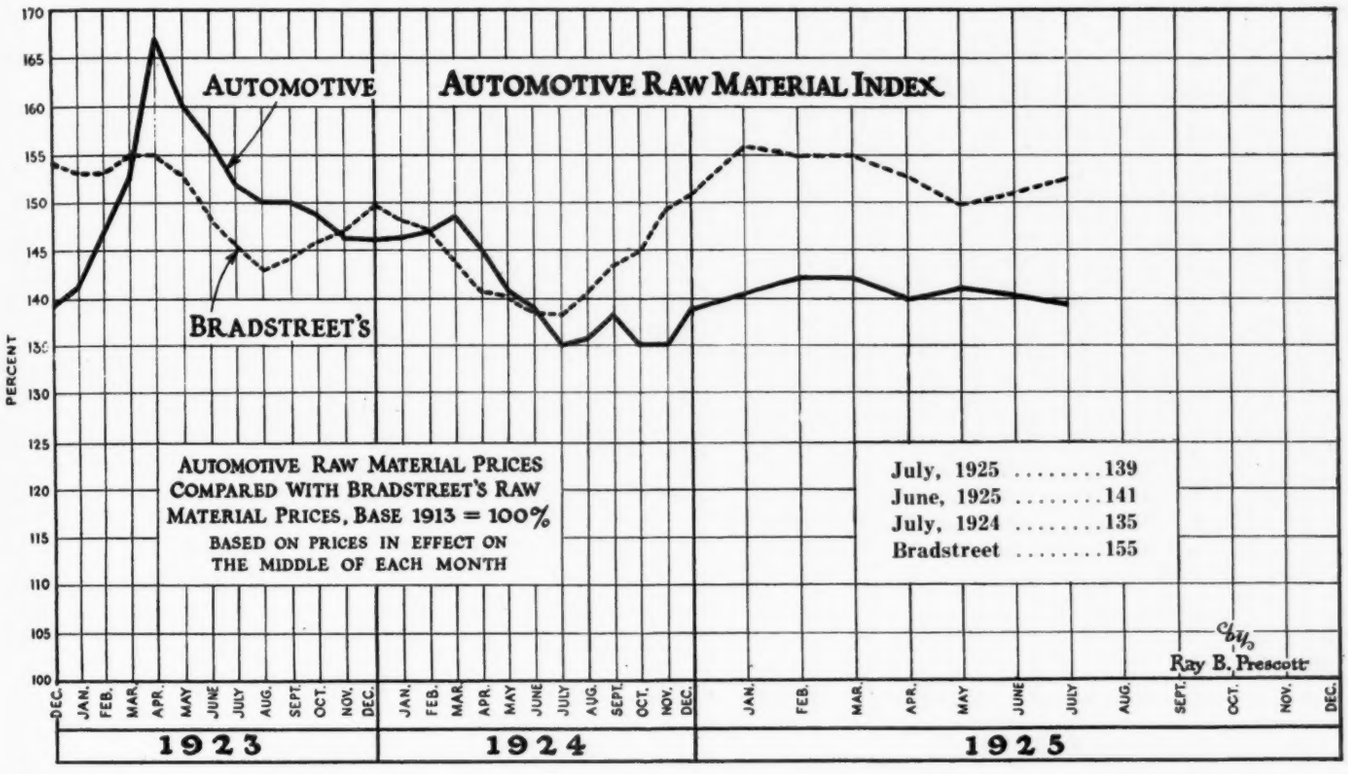
F. B. Stearns Co., producers of Stearns-Knight motors, is offering shareholders 67,210 shares of additional stock at $6 a share. The proceeds will be used to liquidate bank debt. This will leave 760 shares of the authorized issue of 260,000 shares remaining unissued.

White Motor Co. of Cleveland, has declared the thirty-ninth consecutive regular quarterly dividend of $1 per share (8 per cent) payable Sept. 30 to stockholders of record at the close of business Sept. 21.

H. H. Franklin Manufacturing Co., manufacturer of the Franklin car, declared the regular quarterly dividend of 1¾ per cent on Franklin preferred, payable on Aug. 1 to stockholders of record July 20.

The National Bank of Commerce in New York, trust department, has ready for delivery $30,000,000 definitive United States Rubber Co. 6½ per cent serial gold notes in exchange for temporary notes.

Raw Material Prices On Decline



American Cars Hold Popularity Abroad

(*Continued from page* 193)

15,000 crowns has made it very difficult to expect sales in this class but it appears that automobiles priced locally at between 10,000 and 12,000 crowns, exclusive of the turn-over tax, are moving better.

ITALY. The Milan Automotive Salon which is held in conjunction with the Sample Fair in April emphasized very clearly that domestic passenger cars predominated in this market.

POLAND. The quarter ending June 30 has been the best for the automotive business in Poland. Sales in many cases were double those for the corresponding quarter of last year. The rapid increase in the sales of automobiles for taxi purposes has been the outstanding feature of the quarter.

ARGENTINA. The season just closed was the record year in automotive sales, and confidence is felt on all sides that the coming season will surpass it in number of cars and accessories sold. The Argentine summer season opens with the early spring sales in September. The situation has reduced itself to one of competition between American firms.

MEXICO. Mexico City dealers report a falling off in their business with the report of a total of 597 carloads of machines entering Mexico through Laredo for the first half of this year, against a total of 737 carloads for all of 1924.

"RADIOBILE" RUNS ON FIFTH AVE. DRIVERLESS

NEW YORK, July 29—Fifth Avenue, which has grown accustomed to floods, parades and suicides in the last few days, was given a new thrill when a large automobile with no one at the steering wheel zigzagged through the heavy traffic. The car, which was of a standard make, was equipped with an invention of Francis Houdina's, which enables it to be controlled by radio.

The car is operated by means of the telegraph key of the radio transmitter in a second car, which follows immediately behind. The impulses from the second car are picked up by a receiving set on the radio car and are transmitted to electric motors which operate the controls of the radio car.

PERU. Automotive sales together with most other products declined during the quarter due to the prevailing depression brought on by severe rains.

URUGUAY. There was no cessation in the arrival in Uruguay of automobiles and automotive equipment during the quarter in spite of considerable current talk about dull business conditions prevailing. The import figures for the first five months of the current year are considerably in advance of those of the corresponding period of last year.

Plan Reliability Run for Aircraft in Fall

DETROIT, July 29—An intercity airplane reliability run starting at Detroit and covering twelve cities from Sept. 28 to Oct. 3 has been decided upon by the Detroit Aviation Society. Details of the trip were not made public, although the possibilities of making it an annual event were discussed. Reliability and utility of the present day commercial planes rather than the speed of the entrants will be the main objects to be sought. The shortest hop will be 225 miles and the longest 400 miles.

Entries are assured from the Laird Airplane Co., the Travel Air Co., Stout Metal Airplane Co., Curtiss Aeroplane and Motor Corp., Glenn L. Martin Co., and A. A. H. Fokker Co. It is also considered likely that planes from the Boeing and Douglas companies on the Pacific coast will be entered. Only commercial planes will be allowed on the trip. A trophy will be offered by Edsel Ford to the machine winning the tour under whatever conditions are imposed by the rules committee. It is probable that other prizes of certificates of merits will be awarded.

An exposition of airplanes, airplane accessories, engines and other products connected with the industry will be conducted simultaneously with the meet, it was decided, with all manufacturers being invited to exhibit. The belief was expressed that the public wants to see the newest in airplane construction at close range just as new models of automobiles are objects of great interest.

Favor Mental Tests for Motor Drivers

National Conference on Streets and Highways Urges Drastic Steps for Safety

ATLANTIC CITY, N. J., July 28—Mental tests for motor car drivers in order to decrease the number of accidents throughout the country was favored by the Committee on The Causes of Accidents of the National Conference on Streets and Highways at its final session at the Traymore Hotel.

Dr. Walter V. Bingham, noted psychologist and chairman of the committee, went so far as to say that there is no solution and remedy for the problem if the psychological and pathological phases are ignored. He said:

> Our study of the causes of accidents is barely begun. A long road of investigation is before us before we can find out what needs to be known about human nature on the highway, and the underlying reasons for the carelessness, inattention, recklessness and incompetence which result in most casualties. I am sure that when we have the answers to these basic questions as to why accidents happen we shall have a solid foundation on which to build.

Wants Detailed Reports

A small numbers of "repeaters" were declared by B. W. Marsh, traffic engineer of Pittsburgh, to be the cause of a large number of accidents in that city. He advocated a strict measure which would provide for more detailed reports of all accidents.

Expert investigators to be employed by each community was advocated by John M. Mackall, chairman of the State Roads Commission of Maryland, another speaker before the committee. The speaker pointed out that inaccurate statistics on accidents by those untrained in their work was making it harder to make generalizations for the country as a whole.

The Drafting Committee upheld the previous conclusions of the conference in prescribing speed limits of 35 miles per hour in open country, 20 miles per hour in residential districts, 15 miles per hour in business districts, 10 miles per hour passing schools and crossing railroad intersections, and 4 miles per hour crossing sidewalks to or from alleys or private driveways.

It was recommended also that pedestrians be given the right of way at cross walks, and the vehicle between cross walks.

That the examining of motor vehicle drivers, applying for licenses in those States in which they have become residents, following the expiration of the thirty days' grace allowed under the Reciprocity Act, should be discretionary with the commissioner of motor vehicles, was the opinion of the Committee on Uniformity of Laws and Regulations.

It was announced by Col. A. B. Barber, Director of the National Conference, that the National Research Council of the National Academy of Sciences has joined the group cooperating with Secretary Herbert Hoover. The research council will not only support the conference financially but will also devote its scientific equipment and personnel to the solution of various problems facing the conference.

ARMY FLIERS ELIGIBLE IN FOUR RACE EVENTS

WASHINGTON, July 30—The Army Air Service will be eligible to enter four events in the International Air Races which are to be held this year at Mitchel Field, Long Island, Oct. 8, 9 and 10. In the Pulitzer Trophy, the Mitchell Trophy and the Bombardment races it is contemplated that only military entries will be accepted, although so far no information has been received as to whether or not the Navy will participate in any race other than the Pulitzer Trophy.

The races are held under the auspices of the National Aeronautic Association, the arrangement of details for this year's events being made by an organization founded in New York and known as the New York 1925 Air Races, Inc.

American-La France Co. Taking Another Branch

SAN FRANCISCO, CAL., July 28—Expansion of the business of the American-La France Fire Engine Co., manufacturer of motor fire-fighting equipment, has compelled that corporation to move into larger branch headquarters at San Francisco. Accordingly, Walter Johnson, local capitalist, is erecting a new building which has been leased for ten years to the American-La France company at an aggregate rental of $200,000. This is the fourteenth new branch established by this company in the past two years, according to A. W. McKenzie, Pacific Coast manager of the truck division, who credits the addition of a new division for the handling of modern commercial motor trucks with the enlargement of the corporation's field.

The American-La France company occupied 2000 sq. ft. in its old Montgomery Street location and will have 40,000 sq. ft. in the new building, which is to be ready for occupancy in ninety days from Aug. 1. The company was founded in 1845 and commenced to manufacture motor-driven fire apparatus in 1904. Of the 5000 heavy-duty fire trucks so far distributed throughout the world, only one is out of commission, and that is in the company's museum, according to McKenzie.

Erskine Appointed to Probe Insurance

Reports on Trade Conditions Point to Brisk Business as Fall Models Appear

NEW YORK, July 28—Marking another step in the campaign of the National Automobile Chamber of Commerce to bring down insurance rates, the board of directors at a meeting last week in Buffalo appointed A. R. Erskine, president of the Studebaker Corp., chairman of the insurance committee. Other members will be named in a few days, when a comprehensive survey of the insurance situation will be started.

The insurance projects launched by the Chrysler Corp. and the General Motors Corp. will be studied closely with attention to the details which have caused some insurance commissioners to object to the plans.

The reports on trade conditions at the meeting showed that, although July business is rather slow, a brisk late summer and fall is expected with the coming out of new models. The manufacturers viewed with much satisfaction the results of the first half-year, particularly in the manner in which production had been kept in line with sales, with a consequent favorable effect on the dealers.

Discussion of the foreign trade situation developed the fact that the manufacturers generally are planning to broaden their overseas activities. They are confident of an increasingly large foreign market.

Plans for the fall campaign against automotive excise taxes were discussed at length. The next meeting of directors will be held Sept. 1.

New Aircraft Co. Plans to Build Aeronautic Engines

HARTFORD, CONN., July 28—Announcement has been made by the Pratt & Whitney Co., which is owned by Niles, Bement & Pond, that application has been made in Delaware for a charter to manufacture aeronautical engines, the new company to be known as the Pratt & Whitney Aircraft Co., with $2,000,000 preferred stock and 20,000 shares no par common.

The aircraft company will occupy part of the Pratt & Whitney plant. The officers are:

President, Fred B. Rentschler; vice-president, George J. Mead; secretary-treasurer, E. L. Morgan.

Mr. Rentschler is president of Wright Aeronautical Corp. Mr. Mead will be in charge of engineering work and is chief engineer of the Wright Aeronautical Corp.

The Aircraft Co. will be owned jointly by Pratt & Whitney Co., and certain experienced personnel of the aeronautical industry and other manufacturing interests, says an official statement.

Used Car Situation Is Subject for Optimism

Authorities in Business See Big Opportunities for Dealers During Next Year

DETROIT, July 28—Despite the sensational price reductions which have been made by certain car manufacturers and which others are now contemplating, those who have made a close study of the used car situation are not pessimistic over the future.

On the contrary, they look for dealers and distributors to make more money during the coming season than they have this year. This also applies to the merchants who deal exclusively in used cars.

However, it will be the "era" of merchandising, with those merchants who study their problems the closest being the ones to reap the biggest gain. With this "era" will come better trained salesmen, better organization and ways that will enable the merchant to adapt himself more readily to the problems that confront his business.

Would Train Salesmen

Some of the manufacturers are inclined to believe that there are just two factors, one, the make of automobile and the man who sells it, and second, the organization behind the car. They believe that there is only room for a cretain number of cars and that those automobiles whose organizations do not strengthen their positions will be the ones to go "by the boards." Those who strengthen their positions will get the benefits.

To the dealers and distributors out in the field, they advocate a better selling organization, with the salesman being trained in the best angles of salesmanship. For it will depend a good deal upon the salesman as to whether his employer is able to sell his quota.

The reduction of prices which have been made and which will be made on different makes in the near future will enable the dealer, the distributor and the used car merchants to make better bargains. The day of one dealer getting a customer by giving him a higher price for his used car than another dealer, has passed, with a resulting tendency to stabilize the used car market.

Dealers Are Warned

It is in dealing with the automobile owner who wishes to turn in his old model for a new one that the dealers and distributors are warned to watch their step, especially when the prices on many of the cars have been lowered to where they will cut into their business.

One of the factory executives here whose position is solely to keep in touch with the used car market has this to say:

"There should be more money earned during the coming season, but it will be by the aid of better trained salesmen, a better organization and a better knowledge of automobile merchandising. A good deal depends upon the car that is handled and the organization which backs it. Nevertheless, the price reductions are going to help, because the dealer and distributor have learned how to appraise the car that is being turned in on a new model. Besides the automobile owner has a good idea of what his car is worth and knows that if he is allowed more than it is worth, he pays for it in the price of the car he is buying."

Automotive Business Good in Argentina, Says Tuxbury

NEW YORK, July 29—Due mainly to high wheat prices, business in automotive lines is unusually good in Argentina for this season of the year, according to N. C. Tuxbury, managing director of General Motors, Argentina, S. A., who is here to arrange for larger quotas of cars to be distributed through his organization.

"While some general merchants in and around Buenos Aires are not experiencing the best of business, practically all the automotive distributors and dealers are doing volume sales," said Mr. Tuxbury. "Of course, the motor demand has been stimulated considerably by a general lowering of car prices, but it is apparent that Argentinians are coming to believe that the automobile is for every season use; that it can be used practically as well in the winter time, which is their present season, as in the summer. This, however, is more apparent this winter than ever before."

Mr. Tuxbury was optimistic concerning the coming annual Argentine motor show, to be held in Buenos Aires, Dec. 7-20, a month later than usual. While it was yet too early to plan definitely for it, his lines would be well represented there, he said.

In regard to Chevrolet assemblies at Buenos Aires, he stated that the new assembly plant was considerably behind in orders, on a production schedule of forty cars a day.

Michigan Titles 35,207 Passenger Cars in June

DETROIT, July 29—A total of 35,207 new passenger cars were titled in Michigan during June, 14,357 more than in June of a year ago. The total since the first of the year is now 102,078.

Of the 35,207 automobiles titled, 15,935 were Fords. Medium and higher price cars showed a proportionate increase.

An increase of 1143 trucks titled during the past month was also shown over the same period last year. This year 2,767 new trucks were titled, as compared to 1,624 in June, 1924. The number of new trucks that have been titled since January 1 is now 9,222.

Announce 25 Per Cent Plate Glass Reduction

Big Producers Move to Fight Foreign Competition and Stimulate Distribution

PITTSBURGH, PA., July 27 — The Pittsburgh Plate Glass Co. today announced a general reduction of 25 per cent in the prices of plate glass to meet foreign competition and to stimulate distribution of the product.

The new prices are effective immediately. The reduction was met by the Standard Plate Glass Co., the other producer in this territory.

The cut, which came as a surprise, is expected to have a widespread effect in the automobile industry, which is a heavy user of plate glass.

According to the announcement of the Pittsburgh Plate Glass Co., there have been large and increasing importations of plate glass from Belgium, France and England, and a decreased domestic demand at irregular prices. The latter condition has been brought about to some extent by manufacturers of sheet glass and other products inferior to plate glass displacing a considerable quantity of plate glass due to the higher price on the latter grade. Domestic manufacturers see in the landing of increasing amounts of Belgian plate glass in New York detriment to the American industry and the cut in prices is directly due to efforts to keep the Belgians from making inroads on their business.

The plate glass factories in the United States have been operating during the year to date at capacity and the plants are still working at full rate.

Wisconsin Gas Stations Must Display All Prices

MILWAUKEE, July 27—A vigorous campaign to enforce the order of the Wisconsin Department of Markets requiring the posting of all prices at which gasoline is sold and penalizing secret rebates has been decided upon following a conference between Edward Nordham, commissioner of markets; Attorney General Herman L. Ekern and representatives of the oil industry. Oil dealers are cooperating in calling attention of their retailers to the law. Discussion also was held on the new quantity-price schedules which may serve to substitute open methods of dealing.

PLAN SEMI-ANNUAL MEETING

CLEVELAND, July 28—The semi-annual meeting of the American Gear Manufacturers' Association will be held at West Baden, Ind., Oct. 1, 2 and 3. The date and location of the meeting were decided upon at a meeting of the executive committee held in Cleveland on July 14.

Coming Events

SHOWS

Sept. 8-11—New Haven, Mason Laboratory, Yale University Machine Tool Exhibition, direction of Amer. Society of Mech. Eng., Chamber of Commerce and Yale Mechanical Engineering Department.

Sept. 14-19 — Cleveland, Public Auditorium, Annual Convention and Exposition, American Society for Steel Treating, W. H. Eisenman, secretary.

Sept. 21-26—London, England, Annual Cycle and Motorcycle Show under auspices of the British Cycle and Motorcycle Manufacturers and Traders Union, Ltd.

Sept. 28-Oct. 3—Chicago, Fourteenth annual Safety Congress and Exhibit, Rainbow Room, Hotel Winton, under direction of National Safety Council, A. M. Smith, business manager.

Oct. 5-9—Atlantic City, Young's Million Dollar Pier, Manufacturers' Exhibition in connection with American Electric Railway Association Convention.

Oct. 8-17—London, Olympia passenger car show.

Oct. 18-31 — Salonica, Greece, First International Sample Fair.

Oct. 29-Nov. 7—London, annual truck show.

Nov. 26 - Dec. 6 — Berlin, Germany, Annual Automobile Show in the Kaiserdamm.

CONVENTIONS

Sept. 14-19 — Cleveland, Public Auditorium, Annual Convention and Exposition, American Society for Steel Treating.

Sept. 14-17 — Automotive Electric Association, Forest Inn, Eaglesmere Park, Pa.

Oct. 5-9—Atlantic City, Young's Million Dollar Pier, American Electric Railway Association.

Oct. 7-10—Montreal, Motor and Accessory Manufacturers Association Convention.

RACES

Sept. 7—Altoona, Pa.

Sept. 19—Syracuse, N. Y.

Sept. 30—Fresno, Cal.

Oct. 10—Baltimore-Washington Speedway, Laurel, Md.

Oct. 12—Salem, N. H.

Oct. 24—Charlotte, N. C.

Nov. 26—Los Angeles.

S.A.E. MEETINGS

National

Aug. 27—Hotel Commodore, New York, Motorboat Meeting.

Sept. 15-16—Cleveland, Production meeting and exhibition.

Nov. 12-13—Philadelphia, Automotive Transportation meeting.

Nov. — Service Engineering meeting.

Boston Hopes to Relieve Congestion with Buses

BOSTON, July 27—The Boston Elevated Railroad officials are working on a plan now to aid in relieving congestion in Boston's narrow streets. It has begun purchasing land in surburbs adjoining its terminals for parking motor cars so that owners may have rapid transit into the city.

It is expected that by 1930 Massachusetts will have more than 1,000,000 cars and trucks, more than 40 per cent operating in and about Boston. Congestion will mean either parking in outlying sections or preventing all but business vehicles being used in Boston.

Officials are studying the possibility of removing street cars from some congested streets and using buses. Street cars have already been taken from the routes to the water front and also in the hotel district.

International Harvester Makes Buses for Boston

SPRINGFIELD, OHIO, July 28—Motor buses of the street car pay-as-you-enter type are being manufactured at the Springfield works of the International Harvester Co. for the Boston Elevated Railway Co. The new cars will have a seating capacity of 25.

The Springfield works is turning out a large number of light high speed motor trucks in addition to its motor buses.

BUS LINE FRANCHISE GRANTED

BOSTON, July 27 — The Eastern Massachusetts Street Railway has secured a franchise from the Metropolitan Park Commission, allowing the company to operate motor coaches along certain portions of the parkway between Boston and Nantasket Beach, summer resort. Since 1922 Nantasket Beach has been without street railway service. Granting the right to operate coaches and buses through that portion of the Metropolitan Parks is expected to lead to requests from other coach and bus companies for the same privilege.

AMERICAN TRUCKS IN KONGO AND ICELAND

NEW YORK, July 28—Showing how the world is riding in American motor vehicles, it is worth noting that during the past five months sixteen motor trucks were shipped to Greenland and seven passenger cars to Iceland, while Belgian Kongo, in the heart of Africa, took twenty-nine passenger cars and eighty-seven trucks.

Steinmetz Electric Makes Test Run of 123 Miles

BOSTON, July 27—Edward M. Royster, of the Steinmetz Electric Motor Corp., who came to Boston a few days to try to arrange for distribution for the Steinmetz, made a remarkable record with the 1-ton panel type truck on the trip from the factory, establishing what he claims is the longest run that has ever been made with an electric vehicle with one battery and on one charge during part of the trip.

This was the run from Hartford, Conn. to Boston when Mr. Royster covered 123.6 miles over the hilliest route by way of Springfield and Worcester. The current consumed on this day's run was 297½ ampere hours, the battery rating capacity being 204 ampere hours.

SNEAD CUSHION DRIVE MERGES

JERSEY CITY, N. J., July 28—Arrangements have been completed whereby the Snead cushion drive, which has heretofore been manufactured by Snead & Co., of Jersey City, will be manufactured by the Spicer Manufacturing Corp. of South Plainfield, N. J.

By merging the Snead cushion drive at this time with the Spicer products, it is possible to continue production without any delay and with the same or similar jigs and fixtures heretofore used by the Snead Co.

Government Approves Jackson Petroleum Motor

ROCKFORD, ILL., July 28—The Jackson petroleum motor, manufactured by the Petroleum Motors Corp., has been officially approved by the U. S. Government for possible early replacement in 40,000 military department trucks. A. H. Seise, secretary and treasurer of the company, received notice of the government action at conclusion of a series of tests. The company has been making engines for the Master Truck Co. and is far behind in that schedule. Early expansion of the plant to cover its 10-acre tract here is anticipated. The company recently bought a half interest in the Master Truck and may move the plant to this city.

The Jackson engine is a four-cycle unit, two opposing pistons operating on patent eccentrics which maintain an even flow of power as in a steam engine or turbine. It operates on distillate alcohol or kerosene and as economically as high test gasoline, without carbureter adjustment. Chester A. Harris, Chicago, is president of the company; Mr. Seise, secretary, and other directors are A. R. Floberg, Rockford; W. J. Wahlin, Freeport; J. E. Andrews, and C. B. Shomberger, Chicago Heights, and A. J. Klein, S. T. Meserby and G. C. Smith, Chicago. Louis Savadge, Rock Island, Ill.

PLAN CODE FOR MOTORISTS

WASHINGTON, July 29—In line with the policy indorsed at the recent annual meeting of the American Automobile Association in Atlantic City, the announcement was made from National Headquarters of the Association that steps are to be immediately taken to formulate a code of motoring ethics as a standard of conduct for drivers of motor vehicles everywhere.

The framing of such a code will be one of the important features of A.A.A. activity in behalf of safety during the remainder of the 1925 season, Thos. P. Henry, president of the association, declared. President Henry will name a committee to act as a drafting body for the code.

AUTOMOTIVE INDUSTRIES
VOLUME 53 *New York, Thursday, August 6, 1925* NUMBER 6

Automobile Insurance Activity Allied With Time Sales Problems

Question of rates only one phase of widespread attention now being given by car makers to insurance troubles. Public to benefit from Chrysler, G. M. C. and N. A. C. C. moves.

By John C. Gourlie

MORE than the mere question of rates is involved in the current outburst of new automobile insurance projects, as represented by the Chrysler plan, the General Motors insurance subsidiary, and the movement started by the National Automobile Chamber of Commerce. From all appearances a profound change in the sales policies of automobile companies has been started, and its effects will be felt not only by the producers, but by the dealers, the finance and insurance companies and the public.

There are grave difficulties in the way of making the insurance situation satisfactory, but no one has gone into this new field without due appreciation of the obstacles. Somehow or other a solution will be found for what is perhaps the knottiest of all automotive sales problems.

The fact that the developments in automobile insurance came so suddenly, and at one time, might lead to the belief that the insurance situation had made an abrupt turn for the worse. This is not the case. It is probably a bit more disturbing now than it was a year ago, but fundamentally it is the same. Rates have been advanced slightly, but the big increases have spread over several years. And the other evils which automobile executives see in insurance are also of long standing.

In other words, the feeling that something ought to be done has changed to the determination that something shall be done.

What probably started the insurance movement was the increasing tendency shown of late to overstep the bounds of prudence in the granting of time sales terms. This condition has already been described in *Automotive Industries*, but insurance and financing are so closely interrelated that it is impossible to speak of one without bringing in the other.

Car manufacturers have for some time felt that a closer supervision over the time sales policies of their dealers would be desirable. But for really effective control it is necessary to supervise insurance also, since the two go together in deferred payment transactions, and since more good will of the manufacturer is likely to be destroyed by bad handling of insurance than by unsound financing methods.

Insurance and financing were comparatively insignificant when the business was small. Today they have grown to a menacing height. As the time sales business was expanded and diversified, unforeseen evils made their appearance. The dealers were in command of the situation, and they were able to dicker with competitive financing and insurance concerns for business—and business in too many cases meant commissions and rebates paid to the dealer and coming out of the pocket of the purchaser.

With hundreds of small

NEW developments in the automobile insurance situation are coming through every day.

What will be the result when the smoke has all cleared away?

This article, based on a thorough study of the happenings of the last two months, indicates that among the results will be lower actual costs to the public, elimination of many evils in the process of financing times sales and greater control by car manufacturers of their dealers' time sales practices. The article helps to clarify a situation that has seemed somewhat complex to a good many executives.

finance and insurance companies, some of them organized and owned by the dealer, and most of them without a reputation to maintain, in active competition, the only thought was to "get the business"; service came into the picture only in a very minor way.

Certainly the purchaser, in many cases ignorant of what he was paying for insurance, did not know that from 25 to 40 or 50 per cent of the sum paid for insurance went to the so-called acquisition costs of the business—commissions to the broker, rebates to the dealer, or pure unearned profit for the financing company.

Easy Money for the Dealer

Even where a cash transaction was involved, the dealer has often been able to direct business to his favorite insurance company—in all probability the company that has offered him the largest "rake-off." The purchaser may never have heard of the insurance company to which he is directed, but he feels that he ought to stand on good terms with the dealer, from whom he expects service.

What the purchaser did know, after a time, was that in many cases adjustments, when he had a loss he supposed covered by insurance, were eminently unsatisfactory and often unobtainable without a lawsuit. Here is where the good will of the manufacturer came in for a heavy blow, for a producer is likely to be judged, in the mind of the public, by his dealers.

Other consequences flowed from the struggle for business. The rebates, commissions, etc., were naturally passed on to the public in the form of higher rates. As the matter now stands, a purchaser can obtain complete coverage for his car only at a virtually prohibitive cost, ranging from $150 to around $400 on the medium and high-priced cars. Not only fire and theft rates are involved, but a finance company or dealer is likely to insist on collision insurance, and the dealer on conversion insurance, if, under a recourse plan, he is not sure of his risk. The purchaser, if he is a man of property, is likely to prefer personal liability to all the other forms of coverage.

Most Companies Are Honest

This statement of the evils of insurance is a generalization, and therefore open to criticism. Of course, most insurance companies are honest and give honest service where losses are reported. And most dealers are not guilty of the practices to which objection has been raised by the manufacturers. But the situation is bad enough in the view of the factory executives to call for action, and this action is along the lines of bringing the dealer more closely under the wing of the factory where insurance and financing are involved.

Hitherto the companies have not been able to prevent their dealers from giving business to unsound finance companies and insurance companies. This is the situation now in process of revolution.

There are other angles of the problem. It is the contention of the automobile men that insurance companies, even the reputable ones, are burdened with unnecessary acquisition costs. There are savings to be made in this end of the business through the elimination of commissions. No real selling effort is needed, it is pointed out, on the vast majority of automotive sales, since where time payment is involved, insurance is required.

Just how it is proposed to solve the insurance problem in one instance may be shown by an examination of the Chrysler plan. It is worth noting at the outset that insurance here is merely an auxiliary of a financing plan. In seeking to make an arrangement with the Commercial Credit Corp. to handle Chrysler business on a comprehensive scale that would permit rate reductions, the Chrysler executives found that they would also have to make insurance arrangements. The machinery of the plan may be summarized as follows:

The insurance is effected by an open policy running from the Palmetto Fire Insurance Co. of Sumter, S. C., to the Chrysler Sales Corp. of Detroit. The policy is executed in Detroit where the Palmetto Company maintains a general agency. The policy is for the term of one year beginning July 1, 1925, and covers all Chrysler cars sold during that period in the United States. The coverage is for the full retail purchase price and is for the term of one year from the date of sale to the purchaser.

Under the terms of the policy, the sales corporation is entitled to a certificate in its name and for the "account of whom it may concern" whenever a car is reported to it as having been sold at retail. The cost of the insurance is included in delivery charges to the distributor, who in turn passes it on to the dealer, and the dealer to the purchaser, also as part of the delivery charge. The delivery charge fixed by the sales corporation to distributors is as follows:

The Charge to Distributors

Four cylinder open cars, $10.75 net per car.
Four cylinder closed cars, $12.75 net per car.
Six cylinder open cars, $16.50 net per car.
Six cylinder closed cars, $18.50 net per car.
Commercial car chassis, $10.75 net per car.
Commercial car chassis with body, $12.75 net per car.

These sums the dealer is directed to add to the factory list price, plus tax and freight, and plus the customary dealer's handling charge.

The dealer immediately upon selling a car notifies the sales corporation, which in turn notifies the insurance company, which issues a certificate of insurance (not a policy) and mails it from the Detroit office director to the purchaser, and copies, if desired, to others financially interested in the purchase.

The dealer is powerless to hasten, retard or prevent the attachment of the insurance or to negotiate any change or modification of the plan. The plan, is, therefore, not popular with all the dealers, though many of them probably regard it as a service to the buyer and therefore of ultimate benefit to the whole Chrysler organization, dealers included.

The General Motors Plan

The General Motors plan is along more conventional lines, but like the Chrysler plan it incorporates drastic reductions from the rates established by the insurance conference. In this case a subsidiary known as the General Exchange Insurance Co. has been organized to underwrite insurance on all time sales transactions of the General Motors Acceptance Corp. Coverage on other sales is optional with the purchaser. It covers used cars, and it offers other forms of coverage besides fire and theft.

The General Exchange has its own agency department and therefore avoids acquisition costs and still keeps away from any legal questions involving the resident agent laws existing in over forty States. These legal points are rather complex and there seems little need for going into them thoroughly at this time, since it is likely that the matter will be threshed out in the courts, and since there is possibility that the Chrysler company will modify some of the features of its plan, without, however, changing its fundamental character.

The advantages claimed for the Chrysler plan are set forth in a brief prepared by Cabell, Ignatius & Lown, attorneys for the Palmetto company. Through the separation of financing from insurance, it is held, the finance company is prevented from making a profit out of insurance. The finance company can operate only under financing charges because it cannot compel the purchaser of the car to buy insurance the second time.

Another benefit seen is that the purchaser receives insurance which has been negotiated by persons who have his interest very much at heart. The manufacturer will necessarily keep in close touch with the insurance and insist on complete satisfaction to the customer. In other words, more satisfactory adjustments might well be expected. The brief continues:

"The plan will go a long way toward eliminating many unfair practices which have grown up in connection with the payment of losses. It is a matter of common knowledge that many repairmen charge very much more for the work done if the bill is to be paid by an insurance company. In some cases, commissions and 'rake-offs' are paid by the repairmen out of the exorbitant bills thus forced upon the insurance company. The whole burden is ultimately passed on to the public.

Substantial Savings Realized

"The present plan involves various substantial savings in acquisition and operating costs. No finance company receives any profit from this insurance, and the compensation of 10 per cent paid to the brokers covers the expense in connection with the acquisition of the business, the issuance of certificates, supervision of losses, and all incidental expenses. Such expenses of acquisition and operating, both direct and indirect, frequently exceed 50 per cent of the premiums.

"Then there is the very important benefit accruing to the insurance company in the diversification of its risks. In the ordinary case an insurance company is limited in its diversification to the risks which it can write through its own agencies. Only a few very large corporations have country-wide organizations, and even they are not able to diversify their risks as they would like to. For instance, it is a well known fact that insurance companies are not able to secure as large a percentage of the rural business as they do of the urban business. . . .

"As Palmetto insures every Chrysler car sold in the United States, every such car when stolen and later located belongs to the insurer, even though identification thereof is impossible. Also losses are reduced through the ability of the insurer to replace cars with new cars purchased from the factory at wholesale prices."

Some of the advantages accruing to the manufacturer from a plan such as the Chrysler have already been given. Another would appear to be that through the requirement that the dealer, for insurance purposes, give daily reports of cars sold, a closer check can be kept on sales by the factory. A complete record is almost immediately in the hands of the factory force, with name and address and other information regarding the purchaser. It is a familiar fact that sales records are not always as prompt and accurate as could be desired.

THE "old line" insurance companies naturally resent the entrance of the automobile companies into their field, but it is doubtful whether such an attitude is justified.

The new insurance plans cover only a year. After that the purchaser is free to deal with any agent and any company he chooses. Furthermore, through the lowering of rates that may be expected, the insurance field should be broadened; more automobile owners will become educated to the advantages of coverage, and the agents and brokers will get their share of the increase in business.

A radical business departure such as these insurance plans—naturally incurs opposition and criticism. There is no mistaking the fact that insurance agents and brokers as well as underwriters are very much disturbed over the situation. The agents and brokers find themselves out of the picture entirely, and the underwriters have to face the competition of lower rates.

The fear of the agents and brokers appears to be not well grounded, at least so far as fire and theft insurance is concerned. A large part of this business had already been taken out of their hands through the growth of the time sales financing. When a sale on extended payments is made the finance company customarily handles the insurance, through its own company or one with which it is associated. So that the only field of new buyers open to the agents has been the small minority that pay cash.

The new insurance plans cover only a year; after that period the purchaser is free to deal with any agents and any companies he chooses. Furthermore, through the lowering of rates that may be expected to result from the onslaught of the automobile companies, the insurance field should be broadened; more automobile owners will be induced to accept coverage, and the agents and brokers will get their share of the growth in business.

Generally speaking, insurance executives have adopted a rather detached attitude of criticism.

"Just wait," they say. "Let these automobile companies get their fingers burned in insurance. They are entering a field in which they know nothing and we, on the inside, have seen so many ambitious insurance projects go on the rocks that we have no doubt of the outcome."

On the contrary, there is evidence that the automobile companies have sought the best advice obtainable and that they have not gone ahead without a thorough study of all the factors.

The Adjustment Problem

The conference companies make a great deal out of the fact that they have adjustment bureaus conveniently

located all over the country—which, presumably, an insurance company working for the automobile companies would not have. But it does not appear a difficult problem to establish adjusters at key points where such a large total of business is involved. In practice, the holder of a policy will write to the insurance company's head office, whether or not it is a conference member, and in due time the nearest adjustment office will be notified.

The conference companies also maintain a detective bureau to follow up cases. But an automobile company has unmatchable opportunities for finding stolen cars of its own make. Sooner or later the thief or the thief's customer will need parts and service, and recovery is then a simple matter. General Motors executives say that their branch offices send in reports almost daily of stolen cars discovered.

Moral Hazard Is Small

As under the General Motors plan most of the business will be done with customers of the General Motors Acceptance Corporation, there can be no question in this instance about investigation of risks. Every buyer under the corporation plan presumably is a preferred risk and the moral hazard is excluded. Theoretically the General Motors insurance company would be justified in settling every claim without investigation.

In the Chrysler plan the matter is slightly different. Here another theory is followed, but it is one that has met with the highest approval in other forms of insurance. Just as the big life insurance companies will cover all the employees of a company irrespective of their physical condition, so will all Chrysler buyers be covered with fire and theft insurance.

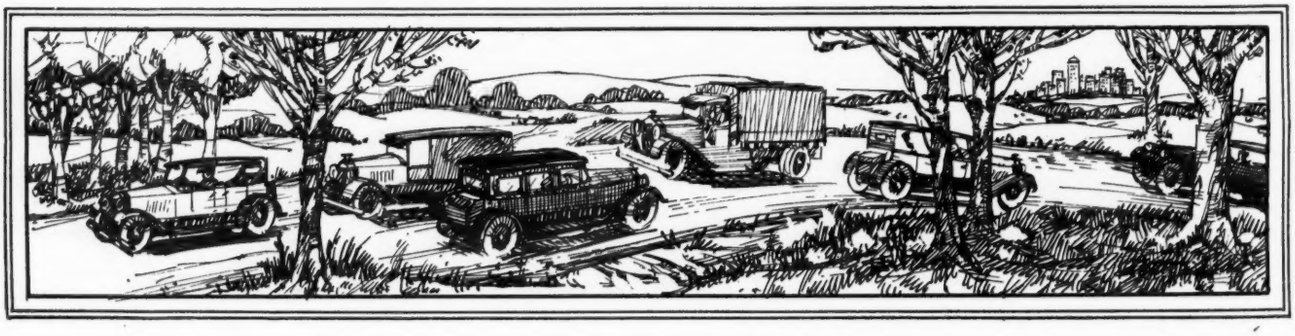
It is declared the rates filed under the new plans, although lower on the average than conference rates, are higher in some thinly populated rural sections where theft hazard is slight and rates accordingly low. Buyers in these districts may protest, it is declared. Such considerations appear to be matters of detail readily disposed of if there are any serious inequalities. If rates are lower on the average they can be made lower or at least on a par with individual rates.

Somewhat different considerations surround the possibility that the members of the National Automobile Chamber of Commerce may go into insurance on a cooperative basis. This project is not very far advanced yet and what lines it will take has not yet been indicated. Any comment, therefore, would appear to be untimely, but it does seem that there is one difficulty to be faced that is avoided in the plans of the individual companies.

In a cooperative plan insurance rates on competitive cars have to be fixed. And if there is any truth at all in the contentions of the insurance companies, some cars are more popular with thieves than others and hence must bear a higher theft rate. The rôle of the rate-maker in such a situation is not an enviable one, though if the companies are convinced of the soundness of the proposition they ought to be able to resolve their differences.

The whole insurance situation is in a state of flux, but the movement promises to speed along for some distance on its own momentum. The current controversies are being aired in the daily press and public interest is being aroused. This alone should be an incentive for the manufacturers to attack their problems in a forth-right manner, even if they were not already convinced of the need for action.

Anyway, it's a great fight, and if blood is let in the struggle everyone may benefit in the end.



Twenty-five Years Ago and Today

IN 1899 a news item in the Binghamton (N. Y.) *News* read:

"A party of thirteen New York bankers headed by Jesse Seligman in three automobiles were hauled up at Yonkers for fast running last Sunday. They were discovered by a lone policeman when they were zipping like a black streak and he made frantic but vain efforts to halt them.

"After they passed he jumped to a wire and telephoned to a squad of policemen about a mile ahead. They spread a net for the festive bankers and caught them.' The drivers, who were simply hired men, gave bonds in the sum of $200 apiece for their future appearance for examination. Of course the penalty will be light and the bankers foot the bill.

"The incident is another illustration of the dangerous nonsense of undertaking to run automobiles through public streets."

Not so very long ago the same paper said—

"The speed limit in the city is 20 miles an hour. Why not have a law requiring that all motor vehicles maintain at least that speed on the business streets of the city? There should be a law requiring all motor vehicles to maintain a speed of at least 25 miles an hour on the main highways.

"The speeding habit is no more of a menace than the snail crawl."

Profits Good in First Six Months; Prices Cut

Many companies earned as much in first half of 1925 *as in all of last year. Price decreases well timed to get greatest merchandising value. Some drops very large*

By Norman G. Shidle

THE most cheerful summer reading we have run across so far are the balance sheets of passenger car manufacturers for the first half of 1925; and they vie with the price cuts in interest. At least three important companies—General Motors, Chrysler and Hupmobile—report earnings for the first six months of this year which are in excess of their total net profits for 1924. Studebaker, Packard and Nash made almost as much in half of this year as in all of last. Dodge earned about $16,500,000 between January and July 1 this year as against about $20,000,000 in the twelve months of 1924.

Seven important companies whose net earnings we have at hand earned $94,701,413 in the first half of this year as compared with $98,276,612 in all of 1924.

These figures tell a striking story when taken in conjunction with the production statistics for the same period.

In the first six months of this year total production exceeded that of the first half of 1924 by only about 115,000. Yet profits all along the line showed an excellent percentage increase. General Motors, for example, showed a 70 per cent gain in earnings and a gain in sales of only 10 per cent. The corporation states that "with no great change either in selling cost or cost of production, beyond that resulting from reduced overhead through staple factory operations and quick turnovers, profits per unit have increased from $76 to $118 in six months." Somewhat similar progress has been made in other companies in the industry.

Increasing use of automatic machinery and closer study of proper utilization of man-power in the last few years is another factor which has been of major importance in profit increases. One important production executive has just written to *Automotive Industries* that "the number of men employed per unit of production is constantly becoming less. This is due partly to the introduction of labor saving machinery and partly to careful study of operation. It is safe to say that less than half as many employees are required today per unit as were needed 8 or 10 years ago in the automobile industry."

Thus while the wage rate has not decreased to any material extent the total wages paid per unit of production is considerably smaller than it was several years ago.

Examination of the current price reductions in the light of these facts about profits, production and operating methods indicates that most of the important producers are following out a policy that has been common in the automobile industry since its inception—that of trying to build future business by giving the public the best possible product at the lowest possible cost.

The drastic character of the price reductions make it seem almost certain that profits will be less in the second half of 1925 than they were in the first half. The profit per unit will be smaller and the total business is not likely to be much greater—and may be smaller—than the 2,175,000 output of the first half of 1925. The lower level of prices undoubtedly will stimulate business to some extent and make possible more sales than would have materialized had prices been left at a higher point, but too much is not to be expected from this source. If the industry goes over the 4,000,000 production mark for the twelve months of 1925, even with the price reductions to help it along, it will have cause to congratulate itself on a thoroughly satisfactory year.

The price reductions which are coming through are the result, to a large extent at least, of keen competition. The excellent profits of the first half year make possible such reductions without endangering the dividend earning capacity of the industry for the year. There is every reason to expect, moreover, that reasonably good profits will be made by practically every stable company between now and December. The profit and loss statements of automobile companies for the first half of this year form a necessary background for proper analysis of the current price reductions and their causes.

More than a dozen passenger car companies have cut prices within the last eight weeks. A large proportion of these decreases have come since July 1. The immediate causes of the lower level which is rapidly being established lie in the increasing keenness of competition and the seasonal slump in retail sales which got well under way after the end of June. The announcement of new models and refinements for the year offered a logical occasion for making the price changes and most companies took advantage of it.

Increased production economies have had something to do with the reductions, but efforts to beat competition and to get a greater share of the market would seem to be the prime factors in most cases. There is a belief in certain quarters that some of the current prices are being based on the expectation of larger quantity production and consequently decreased overhead costs. How individual companies are going to increase their share of total sales by price reductions when similar reductions have been or are being made by their most important competitors is not entirely clear; that some such idea is behind the cuts in certain instances, however, seems probable.

Competition Influences Cuts

The long list of declines which have come through were not unexpected to most executives in the industry, so that their appearance is no cause for uneasiness as to the future. Two months ago *Automotive Industries* pointed out the probability of price cuts before August 1st stating that "Price cuts should not come as an overwhelming surprise to anybody in the next few months."

Among the important companies which have cut prices on one or more models since the first of June are Willys-

Overland, Apperson, Hudson, Studebaker, Rickenbacker, Durant, Kissel, Oakland, Chrysler, Nash, Buick, Chevrolet and Cadillac. More names are certain to be added to this list within the next fortnight and further price action on the part of some of those already named would not be unexpected.

The effect of the price cuts on the various dealer organizations seems likely to be favorable. A good many manufacturers now protect their dealers against losses on cars in stock due to price cuts, seven prominent makers already having stated in letters to *Automotive Industries* that this is their regular practice. The total number of car makers providing protection of this kind probably is considerably greater than seven.

With something over 85 per cent of all cars sold involving trade-ins of used cars, the effect of price cuts on the used car situation is a factor of major importance. When new car prices decline, the value of used cars—both those in the hands of dealers and those which the owner wants to trade in—automatically drops. The price the dealer can get for the used cars he is trying to sell undoubtedly falls farther than the allowance he has to give customers on cars offered in trade, so that factories would do well to urge upon their dealers particular attention to used car methods just at this time.

Used Car Stocks Small

Since used car stocks are considerably smaller now than they were a year ago, the price decreases should not cause any undue harm to dealers' balance sheets, provided they watch the used car end of their business carefully for the next few months. Their task in this regard will be made easier because practically all manufacturers are planning a continuance of the policy of holding production closely in line with sales. Consequently new models will not be forced on a declining market any more than were last year's models.

Properly handled by retailers, the price reductions should have a good effect on the retail financing situation. With lower prices, a smaller sum in actual dollars will constitute a 33 1/3 per cent down payment. Consequently more people should be able to be sold cars on the "one-third down and 12 months to pay" principle. It would be unfortunate if the retailers and finance companies failed to recognize this fact and simply took the lower prices as a further opportunity to extend the temporary market on the basis of very small down payments and 15 to 18 months to pay.

Proper Time for Reductions

The manufacturers this year undoubtedly chose the best possible time and the best possible methods of making price reductions, since the cuts seemed bound to come. The spring selling season was allowed to go through to its completion without being marred by spasmodic price declines which would have tended to slow up buying and make prospective purchasers hesitate about carrying through their buying decisions in the hope of lower prices.

The cuts have come when business normally is expected to fall off. Whatever stimulating effect on sales they may have will come at a time when it is most needed. At more than one time in the past automobile prices have been cut when sales were going along well, with the result that the stimulant of lower prices could not be applied when stimulation really was needed. The situation was handled admirably this year and the entire industry should benefit.

Lighter Header Plates Urged to Improve Radiators

By Robert S. Wentworth

SOME years ago the trend in radiator design was toward very heavy headers. More recently we have endeavored to get rid of certain troubles by using very light headers. Probably either can be satisfactorily used if the design is properly handled, but the use of lighter plates lessens the cost of manufacture very considerably.

Many of the troubles experienced with the old style headers were due in large measure to inability to accommodate themselves to differences in the expansion and contraction of tubes and side pieces. Since the tubes were soldered directly into the header plates, and the header plates were in turn tied together by substantial side pieces, the length of the tubes was maintained the same as that of the side pieces or else the tubes broke their soldered joints as they grew longer under expansion. This was especially the case where the side pieces were so located as not to be heated by the warm air and were, moreover, exposed to the outside air and its temperature.

The number of radiator failures of this type was noticeably increased in very cold weather and was especially large in trucks used for snow removal, due, it seems probable, to the tubes growing hotter and longer with the heavy engine load, while the side pieces remained comparatively cool and short, because of the low atmospheric temperature.

The introduction of light gage header plates promised to do away with unequal expansion troubles and at the same time lower the cost of manufacture. That there has been a very decided improvement in radiator construction with the use of the lighter headers seems apparent. At the same time the mere substitution of light for heavy header plates is not always sufficient, for though it seems improbable that temperature conditions are causing anv more trouble it is quite possible that the weight of the core and the constant vibration or pounding will start new troubles if the flexibility is excessive, and it is likely that the very tubes which failed before will give way under the pounding action.

To avoid the faults of both the rigid and flexible header plates, semi-flexible headers have been tried, having some of the characteristics of each, but the method seems to be somewhat of an approximation and makes further improvement a matter of conjecture, since failure may then be due to either cause. A more desirable method seems to be to assign definite qualities to each header plate. Possibly to use a very flexible, light gage upper header and allowing considerable distance from the nearest tube to the side pieces and tank bolts, and using a heavy header plate or a very well reinforced light header at the bottom to carry the load. If the total core weight is equally divided on all the tubes and the soldered joints are of the proper area and correctly made, the header plate design may be considered good.

Just Among Ourselves

"Too Much Trouble," Say Auto Editors

THE automobile factories aren't to blame for all of the blah publicity which is printed about new models and cars in general. The other day we repeated an experience which we have had a number of times in the past; this time we were so strongly impressed that the urge to speak frankly about it has become overwhelming. A big car distributor held a luncheon recently for local newspaper automobile editors to tell them about a new model and about the advertising he was going to use in announcing it locally. The factory advertising manager had conceived a particularly good idea as regards publicity on the new model. He suggested that each of the newspaper men be given access to all the facts about the car, be given whatever data he wanted and permission to see the new model. Then, the advertising manager suggested, each man should write his own story, describing the car as he saw it. Each paper then would have a different story and each newspaper man would be able to handle the announcement in the way he thought best from an editorial standpoint.

The Burial of a Constructive Idea

DID the automobile editors rise and proclaim this factory man as a new Moses? Did they applaud the broad-minded suggestion that the story be handled entirely on its merits without the factory attempting to force canned publicity down their throats? Did they? *They did not!* They put their hands to their heads and with one accord replied: "Oh, my! If you want to get any amount of space on this story, write it yourself and send it in the way you want it printed. We can't take the trouble to do anything like that." Then they passed out humble thanks to the big distributor for the business he was about to give them as though he was conferring on them some kingly favor rather than as though he were buying a service for which he might reasonably expect to pay in proportion to its value. They thanked the distributor and praised his car as the greatest in existence; told a few stories and went their way, ready to praise with the same unalloyed encomiums the car sold by the next distributor with a good lineage to place.

Factory Tries Hard Some Times, but Oh, My!

THE attitude of the factory and of its distributor in this case was highly constructive. The suggestion of the factory advertising manager as regards the handling of publicity was in line with progressive merchandising thought and, if carried out, would result in more readable and sounder published material about the car; and it offered to the automobile editors an unusual chance to work toward making their automobile page useful, interesting and reliable, similar to the other news pages of the excellent newspapers which they represented. Instead of jumping at the idea, however, and using it as an example to get other factories to do likewise, they sat all over it in a jiffy.

Can You Blame the Car Makers?

CAN anyone blame the factories for expecting to trade advertising for editorial space when their suggestions for editorial betterment are so received by a representative group of automobile "editors"? One is strongly tempted to answer "No." But after all, the answer has to be "Yes" when the problem is viewed from a fundamental standpoint. The advertisements placed in a paper are valuable to the extent that confidence and interest among readers are inspired by the editorial columns. Advertising in papers which use simply canned publicity, however good the results because of the excellence of the regular news sections of the paper, is far less valuable than it would be did the automobile pages conform to the editorial standards of the rest of the paper. Consequently, it is to the advantage of the factory from a purely selfish standpoint to have the newspaper automobile pages reflect a conservatism of statement and accuracy of judgment which will inspire the confidence of the average reader. Hence the desirability of sound, informative factory publicity, even where it is possible to get published lavish and extravagant claims and dissertations regarding the merits of the product.

Oldsmobile Protects Dealers on Price Cuts

THE question of protecting dealers when prices are cut suddenly has assumed more than academic importance again. The long list of price decreases which has adorned the news pages for the last few weeks makes price cut rebates a very practical matter for dealers. Consequently, it is interesting to note the addition of another name—Oldsmobile—to the list of companies which make it a practice to protect dealers in cases of this kind. That makes our total seven, namely: Packard, Studebaker, Hupmobile, Franklin, Nash, Chevrolet and Oldsmobile. We're inclined to think that even yet the list isn't complete.

N. G. S.

New Jewett Is Fitted with Air Cleaner and Coincidental Lock

Prices are $15 to $120 lower than on previous models. Four-wheel brakes cost $40 extra. Wheelbase has been lengthened to 115 inches. Single lamp headlights are used.

By L. S. Gillette

NEW bodies of improved design with more attractive color combinations and mounted on a longer wheelbase chassis, the adoption of a coincidental lock on the steering gear, and several changes on the chassis including the fitting of an air cleaner, constitute the changes which are included in the latest series of the Jewett Six cars.

Compared with the previous standard equipped models, price reductions ranging from $15 to $120 are made, while five body styles instead of eight comprise the line. As announced by the Paige Motor Car Company, the new Jewett prices are as follows: De Luxe roadster, $1,500; De Luxe touring, $1,320; Standard coach, $1,245; De Luxe coach, $1,400, and De Luxe sedan, $1,680. While these prices represent the advertised list, all cars are factory equipped with the Paige-Lockheed four-wheel hydraulic brakes for which there is an additional charge of $40.

Increasing the wheelbase by three inches to 115 in., with corresponding lengthening of the propeller shaft, frame and running boards has allowed the bodies to be made roomier and more comfortable, the additional space gained being added to the rear compartments. The new models form a striking contrast with the previous line because of their longer appearance, most noticeable in the cowl lines, built in sun visors and more colorful finishes, the latter being in permanent lacquer as before. Both the sedan and roadster are finished in the popular two-tone design, while the other three models are of the single tone effect with jet black moldings and tops.

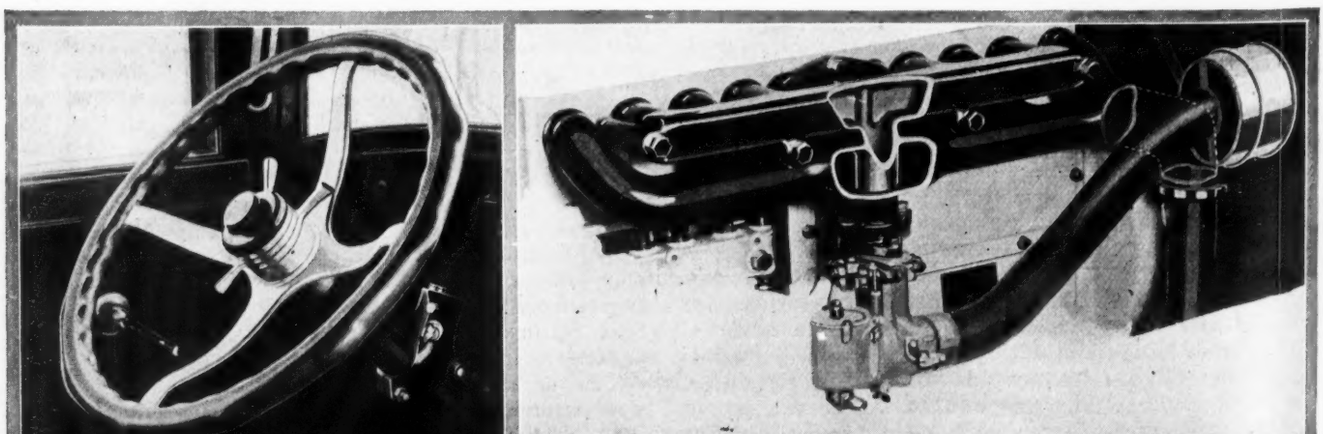
Greater protection from theft has been assured on the new models by the fitting of a "Hershey" coincidental lock which simultaneously locks the steering gear when the ignition switch is turned off. Mounted on the column at the dash, the steering gear is locked by a plunger which engages with the wheel shaft, while the switch mechanism is also embodied in this unit. To avoid locking the wheels when it is desired to switch off the ignition as in the case of descending steep hills, a small press stud is provided on the lock which enables the ignition circuit only to be opened, leaving the front wheels under control. A larger stud protected against accidental operation locks the wheel and ignition.

Ball and Socket Pedal Action

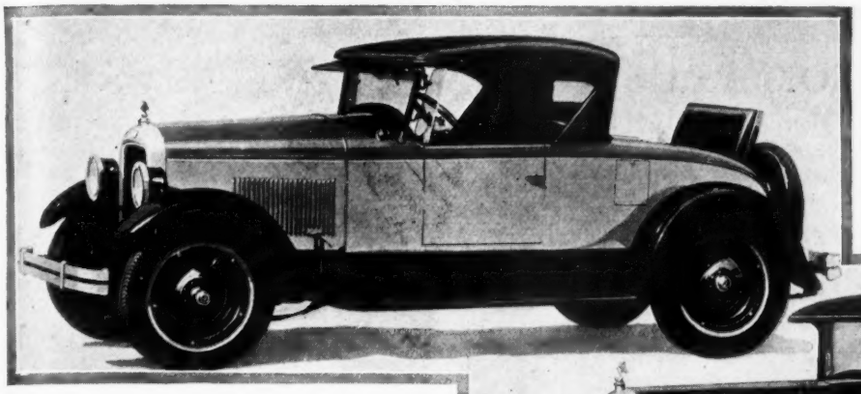
An original and interesting feature on the new Jewetts to keep the front compartment free from engine heat in the summer time, cold drafts in the winter and eliminate possible rattles is the ball and socket type of clutch and brake pedal action. This style of construction enables the pedal shanks to be fitted very closely to the front floor board, and also prevents the possibility of their binding.

An Ireland and Matthews air cleaner of the inertia type is located just to the rear of the fan to the carbureter intake on both the Paige and Jewett cars. With the exception of a bigger and heavier counter-balanced crankshaft recently adopted on the Paige, no important changes have been made on either engine.

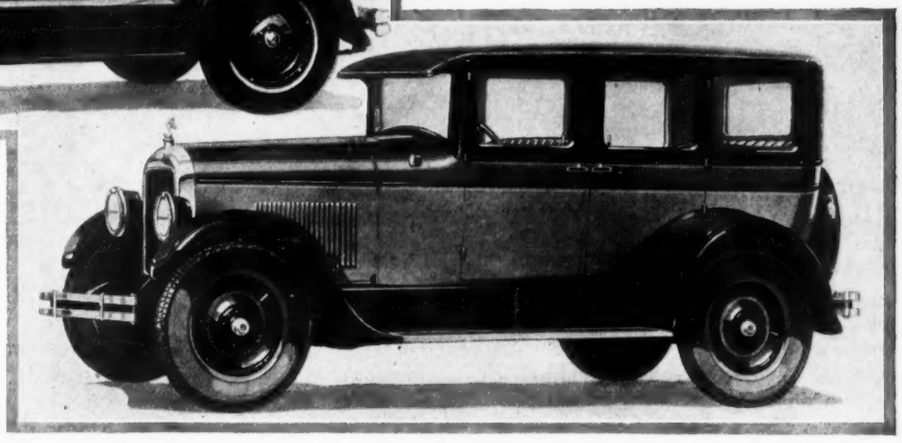
Single lamp headlights employing a bulb with two filaments, one of the latter as a dimmer, are now carried on a heavier and more substantial tie-rod. Where the headlights are attached to the fenders and tie-rod, a casting replaces a pressed steel connection previously used; also



Two features of the new Jewett models are the Hershey coincidental lock and the Ireland and Methews air cleaner. To avoid locking the wheels when it is desired to switch off the ignition in descending hills, a small press stud is provided on the lock which enables the ignition circuit only to be opened, leaving the front wheels under control



Jewett De Luxe Roadster is priced at $1,500



Jewett De Luxe Sedan; price $1,680

with this new style the headlight wires are hidden from view and insured further protection from possible damage. To make the control of the lighting system more convenient for the driver, the switch has been removed from the dash board and is now mounted in the center of the steering wheel. Other improvements in the electrical system include the addition of parking cowl lamps to match the headlights and an indirectly lighted panel on the dash, the latter being of finer design. Larger hub caps of sturdier construction and improved appearance are fitted on the new models.

While the moving of the clutch and gearshift levers three inches further forward has allowed considerably more room in the front compartment of all bodies, this change is particularly advantageous in the case of the coach models. Where traffic conditions made it inadvisable to leave the car on the left side, the driver can leave from the right door without disturbing any of the passengers, while, of course, it is possible for passengers to enter the rear compartment without troubling those in the front seat.

Wing Type Door Handles

Among the body refinements of the inclosed models are the wing type inside door handles, which are very similar to those used on the Paige; a novel feature in installing of ash trays in the arm rests of the sedan, and the built-in visors over the windshields. Both the De Luxe roadster and the De Luxe sedan are finished in the same two-tone color style, the scheme being Arizona gray with a darker shade, Pueblo gray, above belt molding. A cordline stripe of old ivory extends below the molding. The same color scheme is used on the De Luxe touring and the De Luxe coach, the finish being in beige brown and trimmed in ivory stripes set off with jet black molding. The standard coach is offered in Bolling green, finished also with ivory striping with black molding. Jet black lacquer is employed for the tops of the closed cars, while with the exception of the standard coach all radiators are nickel-plated.

Equipment on the De Luxe models includes one spare tire with cover and rim; full bumpers front, with quarter bumpers on rear; rear view mirror; combination stop and tail light; automatic windshield wiper, and heaters in the closed cars. Excepting the standard coach, which has artillery wheels, all cars are supplied with steel wheels as standard equipment.

U. S. Copper Production

FINAL statistics of the production of copper in the United States in 1923 and 1924 are issued by the Department of the Interior in a statement which has been compiled by H. M. Meyer of the Geological Survey. In 1923, of a total world's production of 2,711,533,000 lb., the United States produced 1,464,164,995 lb. The world's production in 1924 was 2,998,286,000 lb., of which the United States produced 1,674,214,599 lb. The average price of copper was 14.7 cents per pound in 1923 and 13.1 cents a pound in 1924.

In 1923 the United States imported 676,473,338 lb. of unmanufactured copper and exported 828,854,827 lb. In 1924 the country imported 768,813,731 lb. and exported 1,116,775,136 lb.

The smelter production of primary copper from domestic sources during 1924 increased by approximately 14 per cent, but the value of the production was only 1 per cent greater.

The high records for production and consumption in times of peace established in 1923 were broken with a substantial margin by the production and consumption of 1924. Smelter production and withdrawals on domestic account in 1924 were surpassed only in 1916, 1917 and 1918. Consumption in 1924 was at a somewhat higher rate of production, and stocks of refined and blister copper decreased 60,000,000 lb.

Imports of copper attained a new high record in 1924 and exports came within less than 9,000,000 lb. of the record established in 1917.

Consumption in this country has reached very large proportions but is still far from its maximum, in view of the further electrification of railroads, indicated expansion in the hydroelectric field, and prospective increases in other fields where the consumption of copper is large. Had consumption abroad increased in the same proportion as at home there might have been less cause for dissatisfaction in regard to prices, although if European demand had been large, production, which in the United States has been considerably below capacity, would have materially expanded and a higher level for prices might not have resulted. Europe is now taking increasing quantities.

A Newspaper Editor Tells—

"What I Think Is Wrong with Automobile Publicity"

By Donald Ashton

Editor, Automobile Section, Sacramento (Cal.) Bee

ADVERTISING writers, sales managers, designers, actors, novelists, in fact all who have relations with the public, are prone to inquire, "What is the reaction?"

Believing that individual reaction may be taken as a criterion of group reaction, I shall endeavor to set down here some of my reactions to automotive publicity. My views, naturally, will be those of a newspaper editor and there are many automotive experts who will disagree with my contentions. But it should be remembered that an editor is successful only insofar as he reflects and interprets the desires and interests of his readers. I will, therefore, stand my ground as a qualified spokesman for the reading public which the automotive publicity man is seeking to reach through the medium of the newspaper.

Let it be set down here in the beginning that I am discussing publicity, not advertising masquerading in news type which eitner has been handed out as pap by a weakling newspaper or has been forced down the throat of a protesting editor with an advertising contract as a bludgeon. I am not one of those fanatics who believe nothing can be news that carries advertising value. Neither do I believe that anything is news just because it benefits a large advertiser.

I do not hold the view of some of my brethren of the Fourth Estate that "an automobile is an automobile." The American citizen doesn't think "automobile." He thinks Buick or Ford or Dodge or some other specific make. Automobiles are more generally referred to by their trade name than any other commodity and the name of a popular automobile has become a common rather than a proper noun. For this reason the motor car is entitled to special license in the news columns, a license that, unfortunately, has been sorely abused.

In an industry as great as that of manufacturing and distributing automobiles there is much genuine news created. Often this news can be converted to the benefit of the manufacturer. As I see it, the function of publicity is not to supersede or compete with advertising. It merely should turn the spotlight on news that might be overlooked in the usual course of events.

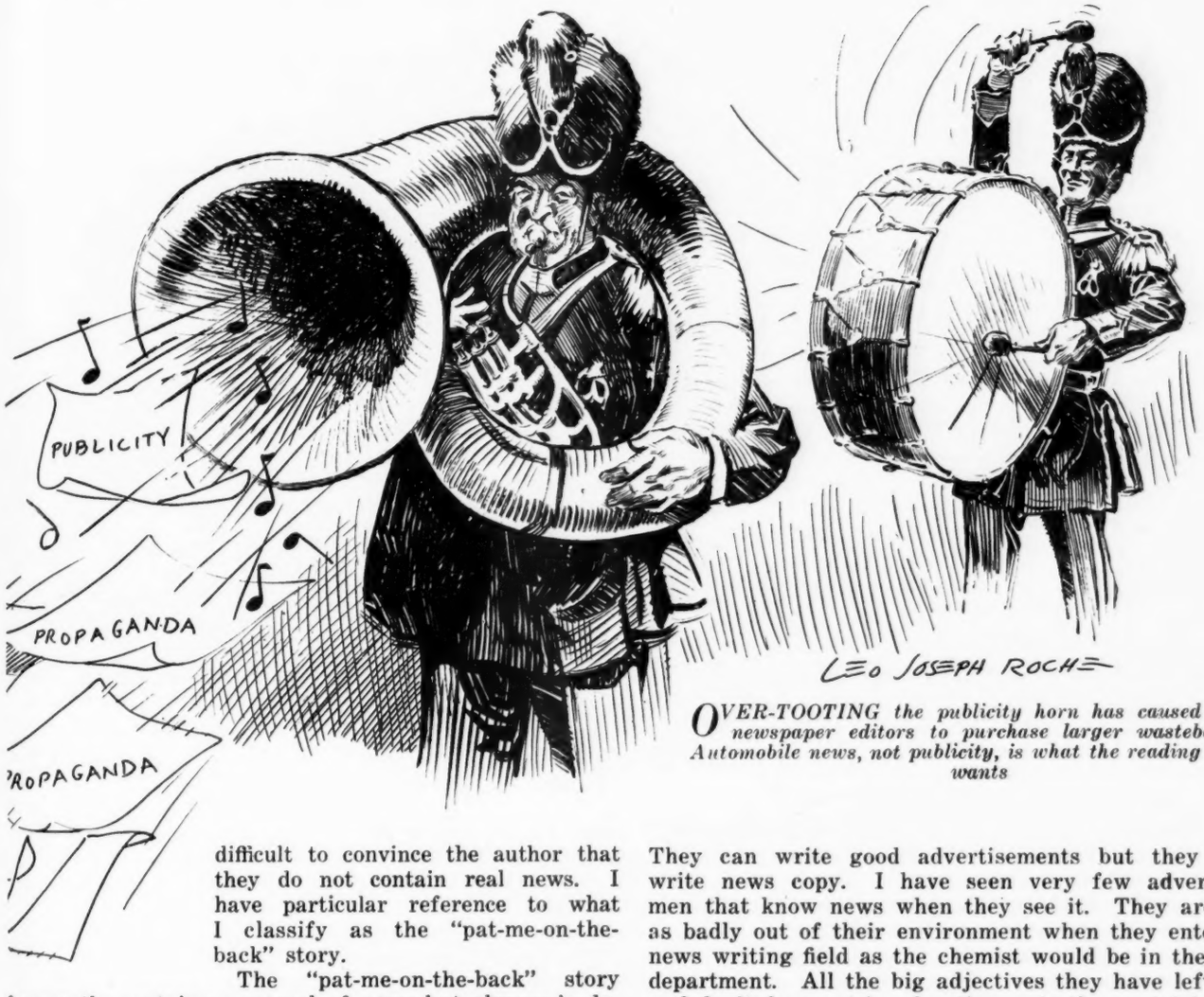
What Is Good Publicity?

All of this is more or less introductory and leads up to the questions: "What is good publicity?" or "What is news?" It might be easier, in view of the weight of my waste basket to tell what is not news.

I have on my desk an elaborate account of a baseball game played at the ——— factory in the Middle West. This certainly isn't automotive news, and I haven't the moral courage to offer it to the sporting editor of a California newspaper. What, in the name of common sense does any automobile manufacturer expect such piffle to accomplish for him? How can it sell automobiles or increase his prestige when, if published, it would be quite as ridiculous to the reading public as it is to me?

Every time a publicity writer makes a fool of a newspaper he makes a bigger fool of his company. Would any automotive executive put his O.K. on such stuff in advertising copy and pay good money to have it printed?

I think (and hope) this sort of publicity is becoming less and less frequent. Much of the poor publicity today is misdirected effort rather than brazen indifference. Hundreds of publicity stories come to my desk every month that have been written in all sincerity, and an editor might find it



OVER-TOOTING the publicity horn has caused many newspaper editors to purchase larger wastebaskets. Automobile news, not publicity, is what the reading public wants

difficult to convince the author that they do not contain real news. I have particular reference to what I classify as the "pat-me-on-the-back" story.

The "pat-me-on-the-back" story frequently contains a morsel of news but always is devoted to a forensic recital of what John Doe, president of the Doe Six Motor Car Company, has to say about the wonderful new Doe Six. I don't believe any automobile manufacturer, no matter how egotistical he is, would get up in public and make such extravagant claims for his car. The American public doesn't like egotists. Especially it doesn't like reckless claims backed by nothing but big adjectives. Even in advertising the "hot air" is being eliminated.

Last fall one of the largest manufacturers came out with a new model. It was what I consider a legitimate story. All told, I received seventeen pages of publicity matter alleged to be descriptive of the car. But before I could write a justifiable story about the car I had to go down to the warehouse of the local dealer and look over the car personally. The publicity articles said "wonderful, stunning, a new standard in excellence, etc., etc.," ad infinitum; but scarcely a word about the kind of motor, the finish, the equipment and other facts that make news.

Perhaps I have painted the publicity field in too dark colors. Do not understand me to say no good publicity ever comes from the automotive mills. Once every two or three months I get a story I can use without rewriting. Occasionally an article comes to my desk that tells of something new or interesting in simple, uncolored English, that is so written that it "sells" itself on the unadorned facts it divulges.

The greatest fault with automotive publicity is that about 99 per cent of it is written by advertising men. They can write good advertisements but they can't write news copy. I have seen very few advertising men that know news when they see it. They are just as badly out of their environment when they enter the news writing field as the chemist would be in the sales department. All the big adjectives they have left over and don't dare put in advertisements they put into publicity.

Another fault with publicity writers is too much "playing to the grand stands." If the president or sales manager of the automobile company wants a personal publicity agent let him hire one, but don't ruin the publicity on the automobile. Too much publicity is written for "home consumption." As long as it flatters the "boss" it matters not whether any newspaper ever publishes it. Don't forget the old adage: "A stick in the paper is worth a column in the wastebasket."

Trained News Writers Needed

I have said some rather harsh things about automotive publicity in general. I have said the same thing to automotive executives every time I had a chance and occasionally have been agreed with. But those few who have agreed with me have done little to remedy the situation. Some have prohibited running their advertising in piffle-saturated automobile sections, but continue to flood the press with piffle themselves.

Most of my criticism has been destructive. What would I do about it if I were an automobile manufacturer? My first step would be to divorce absolutely the advertising and publicity departments. Next I would hire a publicity man who was a news writer. If an applicant ever had written an advertisement he would be disqualified. I would put him to work "covering" the factory, its distributors and its dealers just as a reporter "covers" his beat. He must report all the news but must not manufacture news. I would edit his

WRITING of his experiences in conducting the Automobile Section of the *Sacramento* (Cal.) *Bee*, Mr. Ashton says:

"Briefly the policy is this. I am editor—not advertising manager. I have absolutely nothing to do with advertising. Automotive publicity that comes to my desk is used or not used on its news value exclusively and regardless of whether the company issuing it is an advertiser or not.

"When new models appear I usually inspect them and write a story describing them. This story is written much in the same tone as the descriptions appearing in Automotive Industries, although of course, the recital of the improvement and changes is much less technical.

"It is the contention of *The Bee* that an automobile section should be written for the benefit of the readers rather than for the amusement of the advertisers. The advertising space is considered worth the price asked without any rebates in the form of free publicity or 'readers.'

"Most of the automotive advertisers have endorsed this policy. A number of advertisers who refuse to allow their advertising to appear in ordinary automobile sections use *The Bee* consistently.

"Stimulation of automobile buying and the use of automobiles is considered the province of an automotive news section. Securing the purchase of a certain kind of automobile is the province of advertising.

"I have thought that an article of this kind might be interesting to automotive executives and might play some small part in bringing about a better type of automotive publicity."

copy as carefully as if I was paying $500 a word to have it printed—and I'd cut out the superfluous words accordingly. I would judge his success not on how much copy was printed in the wide-open sheets, but by how much he could get by the most "hard boiled." If I found a man that could fill the bill I would consider him as valuable as any executive in my establishment.

Because "the other fellow" floods the press with piffle don't follow suit. Poor publicity, poor car, figures the public.

News happens. If it doesn't happen there isn't any story, so don't blame the publicity man.

You wouldn't run an advertisement that said "blaa, blaa" and your name. Why run such publicity?

A new model isn't news two weeks after the advertisements announcing it have appeared.

Of course you think your car is a good one. You wouldn't say otherwise and the public knows it, so it's no news.

Because publicity is free don't waste it. It may expire some day.

Conviction Is Lacking

A point which many automotive men forget about newspaper publicity is this: It is of no value if it doesn't get into print and if it does get into print its value is doubtful on most newspaper automobile pages as now conducted because it carries no conviction.

The reading public knows that the average newspaper automobile page is loosely edited, and composed mostly of blurbs and "puffs." As a result very few people waste their time on it. Those who do give it their attention attach little weight to its contents.

A properly edited automobile page, however, will attract readers and command their respect. For that reason automotive manufacturers and dealers should welcome a change that will give them more pages of the type which are not influenced by advertising.

The industry will benefit by this policy in the long run. Not as much automobile material will get into print but that which does see the light of day will catch reader interest and inspire a reader faith that is entirely lacking now.

And as more genuine interest and attention is centered in the automobile page for the news it contains, so will more attention be given to the advertisements for which the manufacturers and dealers pay good money.

TESTS made recently by the Stutz Motor Car Co. on plate glass reinforced with fine parallel wires to determine its ability to withstand shock and impact, indicate that its use in windshields would minimize danger from flying glass.

The plate glass from which the windshields used in the test were cut, was reinforced with fine wires running parallel to each other at intervals of two inches. In one test, the reinforcing wires ran vertically and in the other horizontally, somewhat better results being obtained in the latter case.

To test the ability of the material to withstand shock, a 248 lb. block of lead was suspended on the end of a 35 ft. cable. This block was then lifted to a height of 24 ft. and released. A sedan was anchored to the ground so that the block of lead struck the front end of the chassis at the lowest point of its swing, or in other words, at the point of maximum velocity. No damage was done to the glass in this test.

Ability to withstand impact was tested by throwing a block of wood and metal weighing 3¾ lbs. against the glass from close range. The glass, of course, cracked badly, but it did not shatter and only a few small slivers were broken off.

Carbureter Articles—Corrections

THROUGH an unfortunate mistake in making up the articles on the Stewart Warner Carbureter in our issue of July 2 and the article on Fuel Supply Requirements for Acceleration in our issue of July 9, some of the cuts were incorrectly captioned. In the first mentioned article the cut marked Fig. 2 was really Fig. 4; the cut marked Fig. 3 was Fig. 2, and the cut marked Fig. 4 was Fig. 3. In the article in the July 11 issue, the cut marked Fig. 7 was Fig. 7c; the cut marked Fig. 7a was Fig. 7b; the cut marked Fig. 7b was Fig. 7 and the cut marked Fig. 7c was Fig. 7a. The captions in all cases go with the figure numbers under which they appeared and not with the cuts under which they were erronously placed.

Curbing Accidents by Making Reckless Drivers Financially Responsible

Two plans now available, says writer, whereby personal accountability can be enforced. Better than generally applied compulsory insurance.

By Herbert L. Towle

THE author of this article holds that reckless driving is due largely to the lack of financial responsibility on the part of so many drivers.

He doesn't think general compulsory insurance is the proper remedy, because then careful drivers are made to pay for the delinquencies of the reckless.

Therefore, he looks for a solution in two plans which have been originated to deal with the accident situation, one in the State of Connecticut and the other in Switzerland. Both have merit, he thinks.

IN years past, ownership of a car implied intelligence, property and some feeling of responsibility. Today you may be run down by a mortgaged car driven by a man without money enough to bury him. Having nothing to lose, the man has nothing to fear.

In a situation like this, merely repressive legislation, bristling with "thou shalt nots," is the last thing likely to have a good effect. The motor industry's persistence in fighting such laws has been justified by fundamental principles. Drive this thought fully home: Find a way to make personal accountability a fact instead of merely a theory, and there will be little need of harping on rules and multiplying police. Personal accountability, translated into practical terms, means money responsibility for damage caused. How can money payments be extracted from a man who has spent virtually his last dollar on a car?

Right here clear thinking is needed. The public, aroused over the growing accident toll caused by judgment-proof car owners, has demanded that their victims be compensated at the expense (by insurance) of the motoring portion of the public. This is no more than justice to the victims, but it is plainly unfair to the careful owners, who would pay the bills of the reckless. Compulsory insurance is socially justified only if coupled with a sufficient incentive to the careless driver to make him keep out of trouble of his own will and choice.

Two Plans Answer Requirements

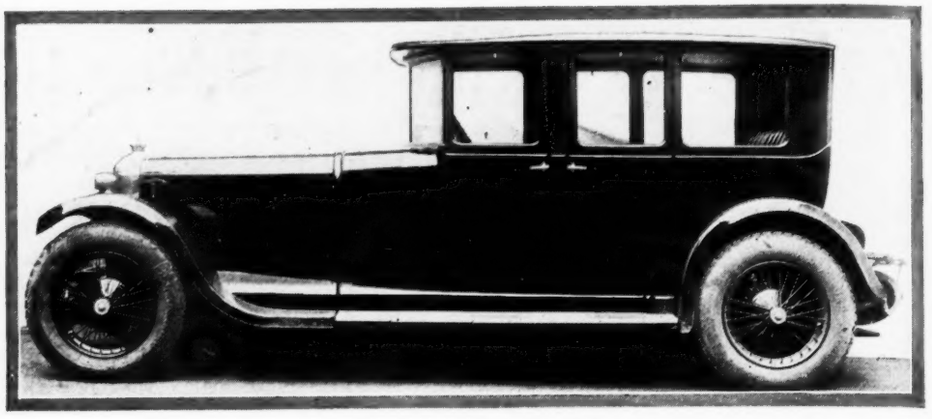
For this purpose two plans seem promising. One originated, I believe, with Commissioner of Motor Vehicles Stoeckel, of Connecticut, and was enacted into law by the Connecticut legislature just adjourned. Under the Stoeckel plan, the commissioner is empowered to require any person convicted of reckless driving, intoxication or running away, or who has caused any injury or material damage by driving, to prove his ability to respond in damages to the amount of $10,000 for personal injury and $1,000 for property damage. He may do this by taking a non-cancellable insurance policy, or by filing a surety bond, or by depositing cash or collateral in such amount as the commissioner may decide. As the commissioner's office keeps full police and accident records of all Connecticut owners, and as the insurance companies may call for the record of any applicant before issuing a policy, it is evident that poor risks will be unable to get insurance, or will have to take it on special terms which will make them careful not to add to their records. And if this fact is well drilled into owners, we may guess that the Connecticut law will result in a marked decrease in motor law violations. Compensation, under that plan, becomes merely incidental, and the victims of first offenders will often remain uncompensated. On the other hand, there will be fewer offenders, first or second; and the premiums paid by policyholders will not have to cover much wilful negligence.

The other plan is the Swiss (or rather Lausanne) plan, either in its original form or modified. The original plan is simply to require all owners to take liability insurance for a specified minimum sum, but to be personally liable for 10 per cent of any judgment, with a specified minimum personal liability. This plan was described in AUTOMOTIVE INDUSTRIES of Oct. 2, 1924. The theory, which seems perfectly in accord with human nature, is that the owner who has to risk a substantial slice of his own money will take no chances.

To apply this plan here, it would be necessary to require actual deposit of the owner's share of liability with the State or the insurance company; and 10 per cent of $10,000 would perhaps be a larger deposit than is required to make most owners careful. Observe that our real objective is to make careful drivers; if we accomplish that, we can afford to waive insistence that the occasionally stubborn careless fellow, or the victim of a hostile jury, shall pay the entire sum. The former will at any rate not get away with it twice, for his license can be permanently revoked.

Perhaps a $500 deposit would be sufficiently sobering; it is worth a trial.

The advantage of this plan is that it would permit us without injustice to require all owners to carry liability insurance or equivalent, for it would virtually eliminate the carelessness which is the ground of most objections to compulsory insurance. Any of us would willingly pay our small share toward universal liability insurance if we knew that it would not be abused. Incidentally, the owners who now get only casual reminders of their duty would, under that plan, be periodically warned by their insurers of the penalties sure to follow negligence. It would "pay to advertise" carefulness.



A Daimler "fabric saloon" with flexible joints in the body frame and fabric panels above the waist line only

Steel Valve Sleeves are Adopted for New Daimler Engines

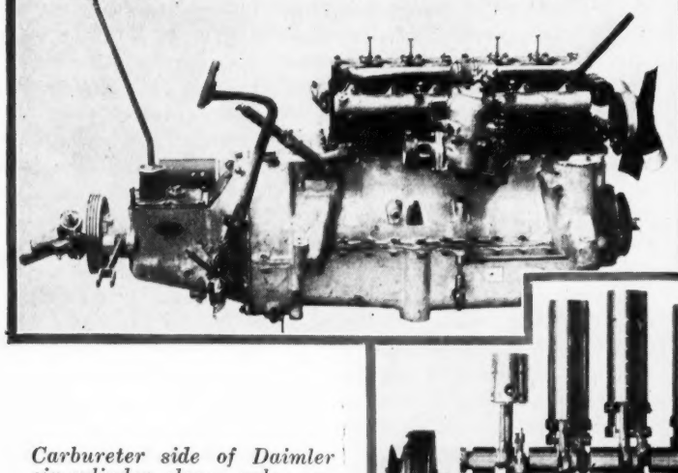
Recently announced series of six cylinder Knight type motors develop considerably more power at upper end of speed range. Port areas larger.

By M. W. Bourdon

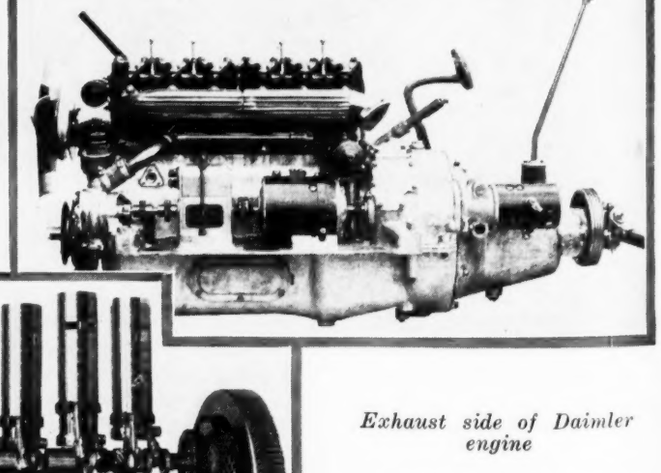
IN the new series of six-cylinder Knight-engined Daimler cars an increase of power has been secured by taking full advantage of the adoption of steel forgings for the sleeve valves. According to an announcement made on July 24, these engines are now on a level at least as high as the best of poppet valve engines intended for normal use, and the following data on the new engines, provided by the makers, tend to confirm this:

Model	Maximum B.H.P.	Peak of Power Curve	Bore and Stroke	Piston Displacement, cu. in.
16 hp.	55 hp.	4000	65x94 mm.	114
20	70	3880	73.5x104	160
25	85	3400	81.5x114	218
32	120	3000	97 x130	350

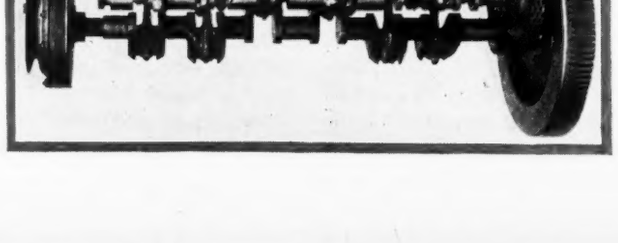
The power increase in each case is at the top of the speed range and results partly from the higher speeds made possible by the reduced weight of the steel sleeves, which are approximately half the thickness of the cast iron sleeves and have white metal contact surfaces applied by a centrifugal process. The other factors tending toward the same end are the larger and rectangular valve ports permitted by the use of steel, the increase of compression rendered feasible by the change (the average ratio is approximately 5 to 1) and the use of pressure lubrication in place of circulating splash with a series of reciprocating pumps and troughs linked to the carbureter throttle control. A smoky exhaust has been observable frequently in the past; this failing has been successfully



Carbureter side of Daimler six-cylinder sleeve valve engine



Exhaust side of Daimler engine



Crankshaft, eccentric shaft and valve sleeve assembly of new Daimler engine

overcome by the use of baffle plates below the sleeves.

These new engines have a dual ignition system (magneto and coil) operating through the same set of spark plugs and having an automatic timing control from a special governor. A conveniently placed change-over switch is provided, and it is suggested that drivers should make use of the special characteristics of each system by using the magneto for "open" running and high speeds and the battery system for starting, slow running and traffic driving.

Aluminum Pistons Adopted

Aluminum pistons of a peculiar type have been adopted. These have straight sides with a series of four vertical slots extending from the bottom of the skirt up to the lowest ring groove. The skirt is expanded by two helical springs horizontally arranged and located by inwardly projecting studs.

The normal gearing for the new series is such that they all attain their theoretical maximum speed in the region of 2500 feet per minute piston speed, some a little more, others a little less. Thus the 16-55 is geared to 66 m.p.h. at 4000 r.p.m., the 20-70 to 67 at 3880, the 25-85 to 73 at 3400 and the 35-120 to 82 at 3000.

The engine revolutions corresponding to 2500 feet per minute piston speed are approximately

16-55 hp.	20-70 hp.	25-85 hp.	32-120 hp.
4054	3666	3333	2929

Apart from the engine there are few innovations of note. Plate clutches are fitted on all models, single-plate dry fabric on the three largest and dual-plate cork-studded on the smallest. Four speeds also characterize the three largest, only the 16 hp. having a three-speed gearset; but all have central control for the gears and a right hand brake lever.

Four-wheel brakes are standard, pedal applied through a compensating device and adjusted from a single point under the engine hood. The hand lever operates a transmission brake. Wire wheels are fitted to all models, all have Lanchester worm drive and semi-elliptic springs. Balloon tires on the smallest model and semi-balloons (Dunlop six-ply cord) on the others are standard; the steering is light and no shimmy can be detected at any speed up to the maximum on either the 16-55 hp. or the 20-70 hp., both of which I have been able to try out. Gear ratios are somewhat low in relation to engine size and the usual British standard, being as shown in the following tabulation:

Model	16-55 hp.	20-70 hp.	25-85 hp.	35-120 hp.
Tire size	31x5.25	33x6	33x6	33x6.75
Gear ratio ...	5.4	5.4 or 5.9	4.3 or 4.9	3.5
Wheelbase	117 in.	133 or 139 in.	136 or 142 in.	142 or 152 in.
Track	52 in.	54 in.	54 in.	56½ in.

In addition to these four models of the new series, two larger types, the 45 hp. (six cylinders 110 x 130 mm., 451 cu. in.) and the special 45 hp. (six cylinders 117.5 x 130 mm., 515 cu. in.) are being continued, the last mentioned having a wheelbase of 160 in. and a track of 60 in.

Prices Are Increased

The prices of the new series represent increases in comparison with those of the corresponding superseded models; examples are quoted, for the extensive range of cars (when all the optional wheelbases and bodies are considered) prohibit a full list being given here.

	16-15 hp.	20-70 hp.	25-85 hp.	35-120 hp.
Chassis	£490	£625	£725	£1,100
Sedans	890	1,065	1,165	1,540
Fabric Sedans...	715	885	985	1,360
Open Cars.....	650	825	925	1,300

The fabric sedans, though based on the Weymann design, differ from it in having metal panels as high as the elbow line and fabric above. Like all other Daimler bodies, they are secured to a channel steel frame which in turn is flexibly mounted on the chassis, provision being made for relative movement between the front end of the cowl and the arch on which the rear end of the engine hood is supported.

Two More Farm Tractors Pass Nebraska Tests

TWO more farm tractors have passed the official tests of Nebraska State University and have been awarded test certificates Nos. 115 and 116. These tractors are manufactured by Shaw-Enochs Tractor Co., of Minneapolis, Minn., and Advance-Rumely Thresher Co., Inc., of La Porte, Ind.

The Shawnee Thirty (road maintainer), made by Shaw-Enochs and awarded test certificate No. 115, has a 4-cylinder Waukesha vertical L-head motor with 3¾ in. bore and 5¾ in. stroke. Cylinder heads are removable and crankshaft is mounted lengthwise of tractor frame. Rated speed of engine is 1200 r.p.m. Waukesha governor and United air cleaner are used. Two front drive wheels, by which the tractor is also steered, carry engine and transmission. Two trailers in rear carry working equipment and operator. Disk clutch and enclosed gear drive are employed. Ignition is by Eisemann GS4 magneto and carburetion by Zenith equipment. Advertised road speed is 1.5 m.p.h. in low and 3 m.p.h. in second. Total weight of tractor, including eight foot blades, scarifier and rooter plow in addition to the operator, was 9840 lb.

In the rated load test of ten hours the engine developed 11.95 hp. at 1212 r.p.m. Fuel used was gasoline and 3.97 hp. hr. were developed per gallon. In the first maximum load test, which, like the rated load test, was made in second gear, 13.19 hp. was developed at 1169 r.p.m., with drawbar pull of 1969 lb. In the second maximum load test, made in low gear, 11.57 hp. was developed at 1200 r.p.m., and drawbar pull of 3533 lb.

During the complete test, consisting of about 26 hours of running, 1¾ gal. of Mobiloil "A" was used for the engine, 1½ gal. to fill the crankcase and ¼ gal. added.

Oil Pull Model R, made by Advance-Rumely and awarded test certificate No. 116, is equipped with a 2-cylinder horizontal valve-in-head 25-45 hp. motor. It has removable head, crankshaft mounted crosswise, 7 3/16 in. bore, 9½ in. stroke, and rated speed of 540 r.p.m. Fly-ball type governor, Donaldson air cleaner and Manzel lubricator are used. Magneto is American Bosch and fuel valve is Secor-Higgins.

Chassis has two drivers, enclosed gears, disk clutch, and advertised speeds of 2 m.p.h. in low, 2½ m.p.h. in second and 3 m.p.h. in high gear. Total weight, including operator, was 11,900 lb.

In the brake horsepower test at rated load the engine developed 45.55 hp. at 546 r.p.m., and 10.67 hp. per gallon of kerosene used. At maximum load 50.57 hp. was developed at 541 r.p.m. with 9.42 hp. per gallon of fuel. In drawbar horsepower tests at rated load 27.42 hp. was developed at 543 r.p.m. with drawbar pull of 3842 lb., and 6.65 hp. developed per gallon of fuel. At maximum load, development was 32.64 hp. at 546 r.p.m. in low gear, 35.54 hp. at 539.5 r.p.m. in second gear and 34.13 hp. at 539 r.p.m. in high gear.

NEW MACHINE TOOLS FOR

Kempsmith Produces Line of Unit-Driven Millers

IN line with the growing trend toward unit-driven machines, the Maximiller line of plain, universal and vertical milling machines made by the Kempsmith Manufacturing Company of Milwaukee, Wis., is equipped now with the drive motor in a compartment at the bottom of the base. In general the new line of electrically driven milling machines bears close resemblance mechanically to its immediate predecessor in that the heat treated gears and shafts of the drive train are retained and all controls are grouped at the front and one side of the machine. Similarly, the base and column of all three types of machine are integral ribbed semi-steel castings.

In the new line the motor is enclosed in a compartment at the foot of the base and drives to the main shaft through an enclosed silent chain which is placed at the back of the machine. When desired, the motor and silent chain with its enclosure can be replaced by the usual belt arrangement. Speeds and feeds are variable through a broad range and the gears and shafts for these purposes are enclosed with the column being lubricated by a splash system of liberal capacity. A friction clutch is interposed between the upper driving sprocket and the main shaft and is operated by a lever extending to the front of the machine. Control handles for the rapid traverse and working speeds are located conveniently and are fitted with an interlocking system which eliminates the possibility of damage in case the operator shifts the wrong lever.

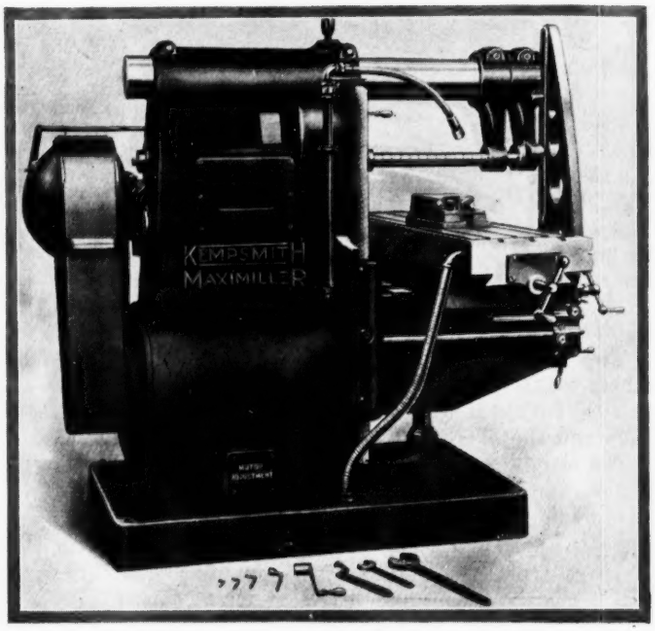


Fig. 1. Left side of new horizontal Maximiller, showing motor location and silent chain enclosure

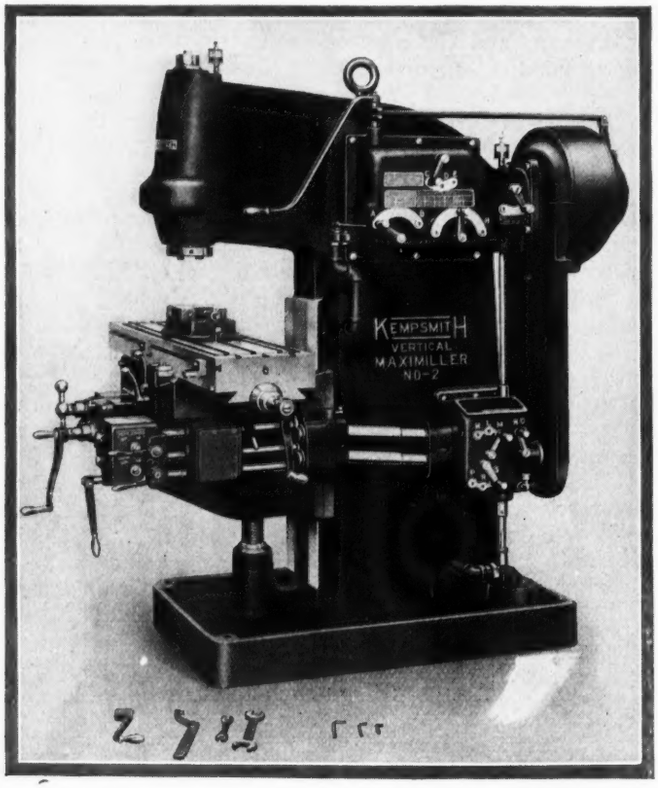


Fig. 2. Right side of new vertical Maximiller, showing concentration of controls which is characteristic of all three types of the new machine

Ventilating louvres are located in the walls of the motor compartment and the size of the motor varies with the capacity of the machine. One of the features of the new machine is a centrifugal coolant pump which is capable of delivering 14 gal. per min. to the cutters. When desired the coolant pump can be stopped by a separate clutch, eliminating the usual trouble with valves and fittings when working on cast iron or similar materials.

Wedge locks are continued for the overarm and pendants. In addition to the usual accessory equipment, unusual attention has been given to attachments which increase the range of usefulness of these milling machines. For the horizontal machines, both vertical milling and slotter heads are available, as are three arrangements of universal cutter heads. Among other items are included a graduated circular table and a rack milling attachment which is equipped with a special indexing device.

New Knock Down Die Set

KNOCK down die sets consisting of die shoes, punch holders and leader pins, which can be used to assemble different combinations from the same pieces, have been developed by Danley Machine Specialities, Inc., of Chicago. All parts of these sets are interchangeable so that every possible combination required for punch press operation can be obtained with a minimum of equipment.

An arbor press is the only thing required for assembling the knock down sets and the operation is simple. If

THE AUTOMOBILE BUILDER

removable leader pins, another new development of the company, are used, even an arbor press is unnecessary. These pins are made in a large assortment of sizes to meet all requirements. They are recommended for use where frequent regrinding of dies occurs, since by use of these pins the dies can be reground without removing them from the die shoe, thus maintaining perfect alignment.

Van Norman Develops Heavy Piston Grinder

Fig. 1—Van Norman No. 96 piston grinder, which is self contained and designed to meet needs of the maintenance and regrinding shop although capable of being used as a production tool

FOLLOWING a policy of building production stamina into service and maintenance equipment, the Van Norman Machine Tool Company of Springfield, Mass., has developed a new piston grinding machine, the No. 96, which is considerably heavier than its predecessor, the No. 2 Re-li-o grinder. Individual electric motor drive for the grinding wheel spindle and headstock is retained although the first motor also drives the table traversing mechanism. In the case of the new machine, the motor sizes have been increased so that a one horsepower motor drives the grinding wheel while one-half horsepower drives the headstock. A swiveled tool holder is placed alongside the grinding wheel and arranged that pistons in stock sizes can be turned preliminary to the finish grinding operation.

In addition to handling pistons, the new machine will grind piston pins, shafts of reasonable length and many other classes of cylindrical grinding. Like production machines, the new grinder is fitted with a coolant pump and mechanical feed which is controlled by stops. In addition to these features, the work head spindle, the wheel spindle and table slides and feeding mechanism are designed to the same standards that control the production machines made by the same company. The automatic feed mechanism allows for six changes in speed ranging from 2 to 18 in. per min. in either direction. As shown by Fig. 1, the machine requires a floor space of 64 in. by 40 in. and is completely self-contained. While this machine is designed primarily to fulfill the requirements of the maintenance and regrinding shop, the makers assert that it is fully capable of handling parts on a production basis.

As an adjunct to the grinder, or rather to the process of grinding replacement pistons to the size required by the cylinder bore of an individual engine, the same company has also developed a device known as the Kor-ek-tor. In this device, which is illustrated by Fig. 2, a cast iron frame carries a cutter head on its base which is lined up with a weighted center mounted in an overhanging arm at the top. The upper center is free to move up and down in order to accommodate pistons of varying lengths, while the distance between the center of the cutter head at the bottom and the frame is sufficient to accommodate pistons of more than 6 in. dia. The cutters are set at an inclined angle of 60 deg., which corresponds to the angle of the centers on the grinder.

In the ordinary course of events, pistons which have been rough machined and then stored for some time are subject to some distortion which throws them out of round and affects the grinder set-up. Where the Kor-ek-tor is used, these pistons are first placed in this device. The weighted upper center is placed in the center hole in the piston head and the weight at the top provides sufficient downward pressure for the proper contact of the cutters at the bottom. The operator then gives the piston one or two turns, which is sufficient to provide a center bearing at the bottom of the piston. Due to the length and angularity of the cutters, pistons ranging from motorcycle sizes to the largest truck sizes can be handled with equal ease. Only a narrow band inside of the counterbore at the bottom of the skirt is machined to form the centering surface.

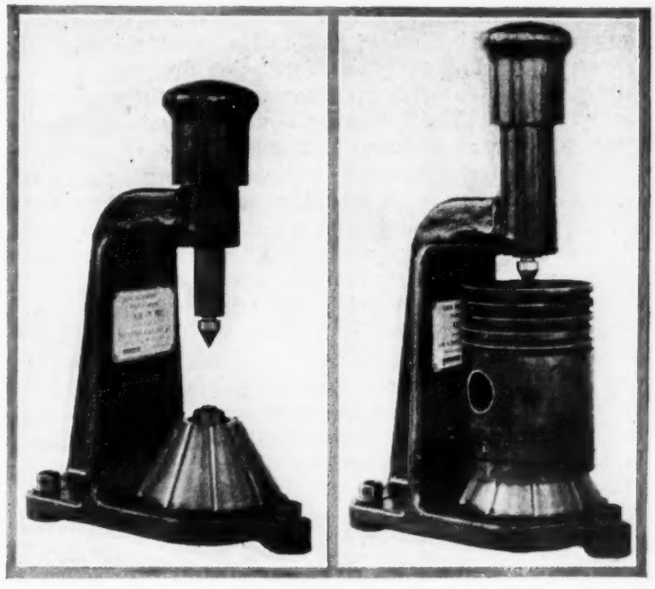


Fig. 2—Van Norman Kor-ek-tor, in which pistons in stock sizes are centered prior to the replacement turning and grinding operations

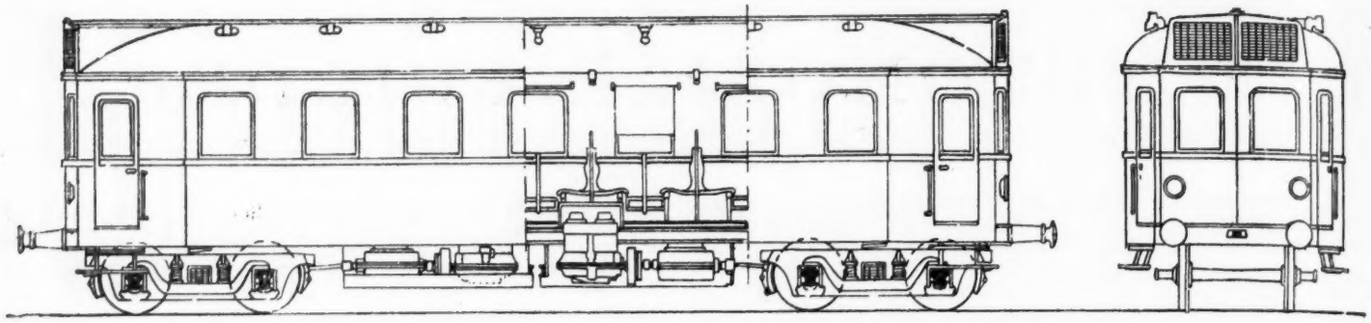


Fig. 1—Railcar of the Hannoversche Waggonfabrik with two powerplants at the middle

Germans Active in Rail Car Design

Type of power plants used, their mounting location, and methods of gear shifting vary widely. Three types of mechanical transmission compared.

By P. M. Heldt

EUROPEAN railways seem to be laboring under substantially the same difficulties as our own, even though the competition of the road vehicle cannot be anything as severe over there as it is here. It appears that operating costs are on the increase and that the margin between gross income and running expenses is dwindling. As a result much interest is being shown in rail cars, which hold out a promise of considerable economies, particularly on local or branch lines. Special attention was directed to the development work which has been done on rail cars in Germany by an exhibition of railway equipment recently held at Stettin, at which more than a dozen different designs of rail cars were shown.

A paper on the subject of rail cars was presented to the German Automobile Technical Association by Chief Engineer Plunzke, who is evidently connected with the German General Electric Co., and was reprinted in *Der Motorwagen*, and a series of articles descriptive of the different types of rail car shown at Stettin appeared in *Auto Technik*. The following resume of rail car development in Germany is based on these sources.

While the first attempt to apply the internal combustion engine to rail car work probably was that of Patton, who built a suburban road in the vicinity of Chicago in 1893, even before the dawn of the automobile era, or nearly thirty years before any real success was achieved in this line, some early work with rail cars was done also in Europe. The Daimler Motor Co. of Germany built a gasoline motor rail car as early as 1902, and one of these was in use on the Swiss State Railways from 1902 to 1907. A life of at least six years seems quite remarkable for a car fitted with a powerplant of such early design, but it is probably explained by the fact that the car was not used very intensively, the average yearly mileage being little over 9000, as compared with 30,000 miles for present day rail cars.

Large scale use of rail cars occurred on one of the Hungarian lines, the Arrad-Csanade Railroad, which in 1907 put in service forty-seven cars with electric drive. These had an average yearly mileage of nearly 20,000.

Mr. Plunzke in his paper discusses the question of the mounting of the powerplant. There is as yet no standard method of mounting, as in the case of the automobile, and it is questionable whether any single method of mounting will meet all requirements, as the conditions are entirely different in the case of different roads. One of the things that requires particular attention in deciding on the method of mounting is accessibility of all parts and particularly of the engines. If the plant is not readily accessible its maintenance will suffer.

Railroad men often make the requirements that the entire platform of the car must be left free for passenger seats, so that the whole powerplant must be located below the floor. This, however, practically always results in poor accessibility of the engine and the other assemblies. Railroad men often compare the internal combustion engine type of rail car with the electric rail car, and assert that what is possible with the latter, that is, placing the motor below the floor, ought not to be impossible with the former. They make the mistake of comparing the gasoline engine to the electric motor. The latter, however, is not a prime mover like the steam engine or internal combustion engine, but rather a converter somewhat like a change gear assembly, and therefore requires less attention.

Three Powerplant Arrangements

There are three possible arrangements as regards mounting of the powerplant. One of these consists in placing it at one end of the car. One advantage of this is that, at least for one direction of running, the operator stands directly beside the engine and can immediately notice any incipient faults. If the engine is located at the center of the car it is quite possible for the operator to observe its function while idling, but he never hears it while working under load. The former arrangement also gives good accessibility. The operator can at all times have access to the engine without inconveniencing the passengers. Another advantage lies in the fact that the radiator can be arranged directly in front of the engine fan, which results in very favorable cooling conditions even if the car is stationary or running at low speed. A further important advantage is that a large proportion of the total weight comes on the driving axle, so that the limiting traction is quite high.

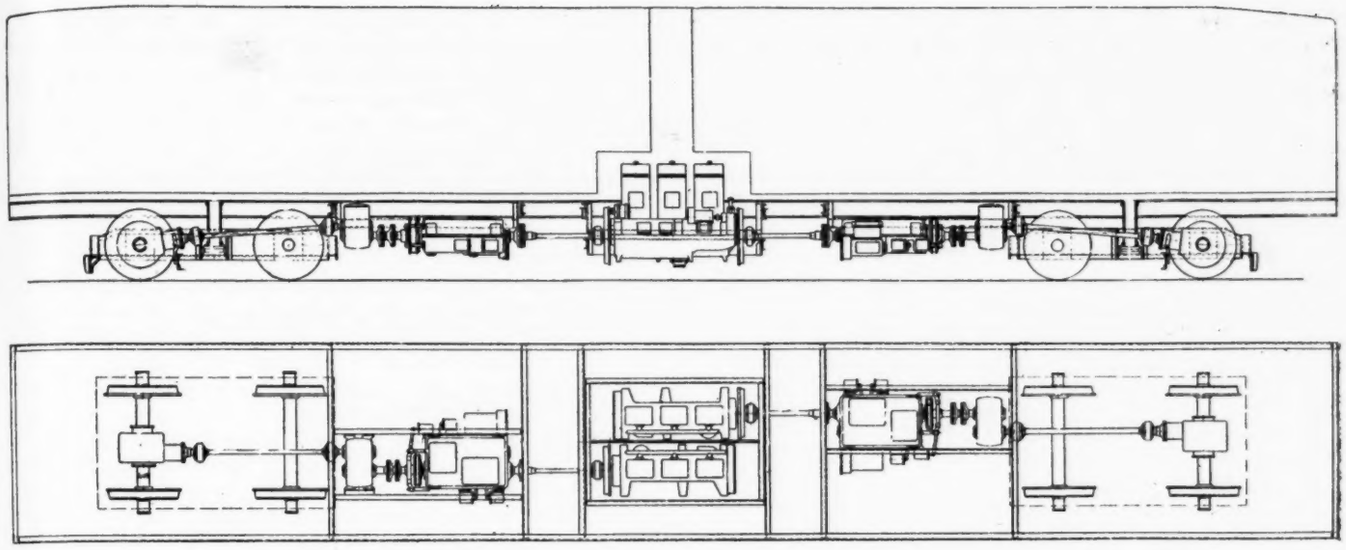


Fig. 2—Railcar used by the Amsterdam Railway Company, with two powerplants at the middle

A disadvantage of this method of engine mounting is that, on account of the great overhang of the engine over the axle, if the car enters a curve a very severe sideward thrust comes on the wheels and the rails. In a fully loaded car, however, this disadvantage disappears practically, as the space occupied by the engine would otherwise be occupied by passengers. With this arrangement it is comparatively easy to drive two axles of one truck. When a double axle truck is used it is not necessary for the powerplant to overhang the axle materially.

A second arrangement consists in having the engine located midway between axles. This has the advantage that, since the powerplant is located at the center of the car, the latter will run more smoothly. From the standpoint of the transmission layout this arrangement is also very favorable, as the shafts can be quite short and a comparatively small number of gear wheels can be made to do.

A great disadvantage of this arrangement is the poor accessibility of the engine. In order to get at it, it is necessary either to crawl under the car or to remove some of the seats. Moreover, with this arrangement it is very easy for oil vapors and gases of combustion to get into the car. As long as the car is new and all joints and fits are tight, this may not be very noticeable, but once the car has been in service for some time the parts above the engine generally have become dried out so that joints have been opened up and the hot gases from the engine get inside the car.

Placing the engine at the center of the car is commendable only if a special engine compartment is provided, as in a steam rail car converted to gasoline which is in use in Amsterdam. A few seats have to be sacrificed in this case.

It may be mentioned in this connection that with the powerplant at the middle of the car it is more difficult to drive two axles than when it is located at one end, especially in the case of cars with only two axles, where, on account of the long wheelbase, it is impractical to use coupling rods. In the case of the converted Amsterdam car which has two double axle trucks, only one axle of one of the trucks is driven directly, the other axle of the same truck being connected to the former by connecting rods. With this arrangement the cooling problem also offers increased difficulties. Three German manufacturers using it employ roof radiators. These, however, are subject to the disadvantage that they cannot be observed by the operator and that they easily freeze up in cold weather.

The third plan consists in mounting the powerplant on the truck. This arrangement was used prior to the war chiefly by the Prussian State Railways in their benzol rail car. Recently it has been used by the Wismar Car Works in their rail car fitted with Maybach Diesel engine (see Fig. 4). The great advantage of this arrangement is that the noises and vibration of the powerplant are not so readily transmitted to the car itself. Besides, if repairs are required to the powerplant, the whole truck can be removed from under the car and replaced by a spare one, so that it is not necessary to put the whole car out of commission while repairs are being made.

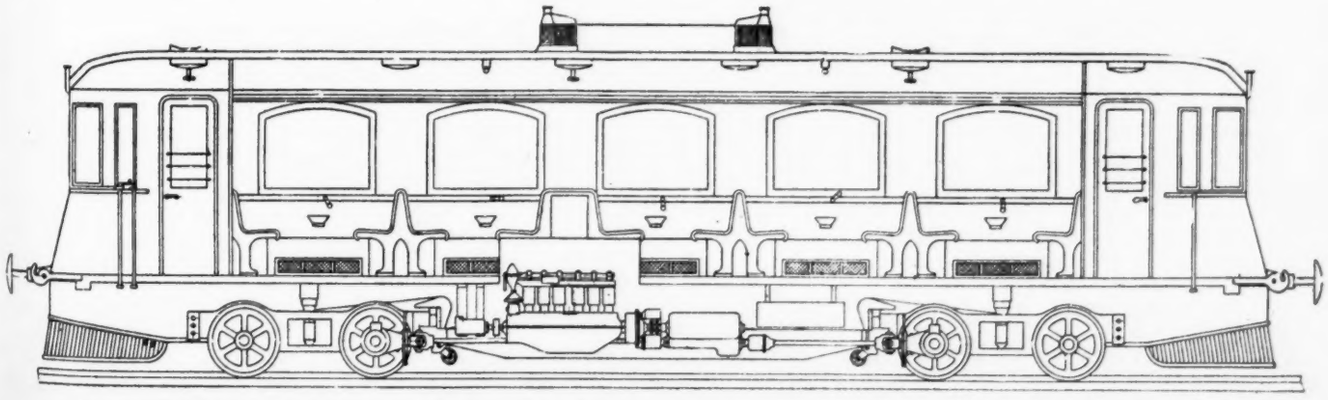


Fig. 3—Railcar of the German Works, with the powerplant on a separate frame hung from the two trucks

However, in the case of small repairs it is not desirable to remove the whole truck from the car, since this requires the breaking of a great many connections between the powerplant and the car body. Another disadvantage is that all connections of the control devices which lead from the powerplant to the car body and the water connections from the engine to the radiator, located on the roof of the car as in the Wismar-Maybach car, must be flexible. A good arrangement of the cooling system is very difficult to work out with this location of the powerplant. The wheelbase comes out very long, longer than it is practical to use in some cases.

A further disadvantage is that the center of gravity of the whole powerplant lies very low. In the design of

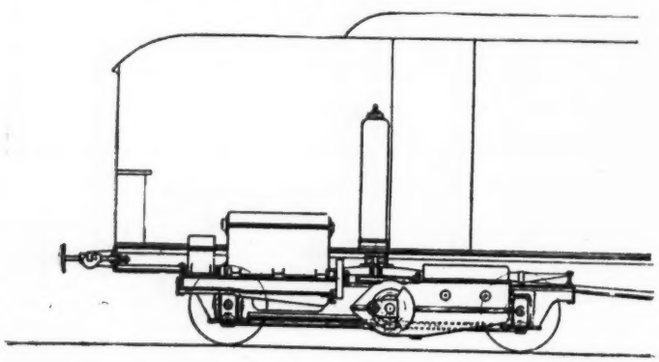


Fig. 4—One end of the Railcar built by the Wismar Waggonfabrik equipped with Maybach Diesel engine

locomotives the opposite plan is being followed, as it has been found that rail vehicles with relatively high center of gravity run more smoothly than those with low center of gravity. In this case conditions are the exact reverse of those obtaining with motor road vehicles, the designers of which always strive to lower the center of gravity. The difference is due to the positive guidance of the wheels by the rails.

With all three arrangements there naturally are possible variations in the suspension of the powerplant. For instance, the individual assemblies may be spring-suspended from the frame or, as in the case of the rail car of the German works (Fig. 3) they may be mounted on a separate frame and the latter secured to the frame of the trucks.

Six Cylinder Engines Used

It will thus be seen that each arrangement has its advantages and disadvantages and, as the requirements of the different lines vary considerably, it is more than likely that all will maintain themselves for some time to come.

German rail cars are equipped for the most part with six-cylinder engines of from 50 to 150 hp., running at about 1000 r.p.m. In the majority of cases they have been developed from truck engines. Aircraft engines have also been employed for the purpose, but are usable only if they are worked at a fraction of their full load. As rail cars have to make an annual mileage of 30,000 or more and the railroads do not want to make a major overhaul more than once a year, the engines have to be of very substantial design. Several N. A. G. rail car engines run from six to seven hours per day under full load, which conditions are not very far from those of stationary engine operation in respect to severity.

The two principal fuels used at the present time are gasoline and benzol, but some use is made also of kerosene and of gas oil. At the present time many attempts are being made to introduce gas generators on rail cars.

The only type of engine in regular production at the present time is the carbureter type. At the railroad exposition in Stettin last year there was exhibited a Diesel engine by Maybach, a high speed engine with air injection, running at 1200 r.p.m. and developing 120-150 hp. Such an engine, because of its high speed, is not open to the same objections as the Diesel engines used on Swedish rail cars, which run at only 500 r.p.m. and are, therefore, very heavy.

Special attention must be given to the clutches for rail cars. Owing to the fact that the masses which must be set in motion are very much greater than in the motor truck, the demand on the clutches is much greater. The normal speed of the rail car is generally much higher than that of the truck and, as a result, the first speed is much higher, which in turn means greater demands on the clutch. The amount of work which must be done by the clutch—the energy which must be absorbed and dissipated by it—can be readily calculated by the principles of theoretical mechanics. The calculation is particularly simple if we take account only of the energy which is required to accelerate the vehicle from a standstill to the desired speed and neglect the constant resistance, which on the level is generally quite low.

The amount of energy that must be absorbed by the clutch is exactly equal to the kinetic energy imparted to the mass. If with the aid of the clutch the vehicle of mass M has attained a speed v, and if after this amount of kinetic energy has been accumulated the sliding period of the clutch has come to an end, then the work done by the clutch is equal to $Mv^2/2$. Hence, during the period of clutch slip the clutch absorbs exactly as much energy as is transmitted by it.

Energy Absorbed by Clutch

In the case of a motor truck having a weight of 4 tons and carrying a load of 5 tons, which has a speed of 3 m.p.h. on the low gear and on which sliding of the clutch stops when a speed of 2 m.p.h. has been attained, equal to a speed of 2.935 ft. per second, the frictional work of the clutch in accelerating the car on first gear amounts to

$$(18{,}000 \times 2.935 \times 2.935)/(2 \times 32.16) = 2400 \text{ ft.-lb.}$$

On the other hand, if we have a rail car weighing 12 tons and carrying a useful load of 3 tons, which has a speed on low gear of 6 m.p.h. and on which clipping of the clutch ceases at 3.5 m.p.h. (equal to 5.13 ft. per second), the amount of energy that has to be absorbed by the clutch in accelerating the car on low gear is

$$(30{,}000 \times 5.13 \times 5.13)/(2 \times 32.16) = 12{,}260 \text{ ft.-lb.}$$

In the case of the rail car the clutch, therefore, must do about five times as much work. Moreover, the rail car often hauls a loaded trailer, in which case the amount of work done is doubled. The speed on low gear often is higher than 6 m.p.h. and sometimes the driver will have the throttle wide open, in which case the range of speed over which there is clutch slippage will be extended. Clutches have given considerable trouble on rail cars, undoubtedly because the conditions of their operation were not fully realized.

Another very important part of the rail car is the change speed gear. Shifting of gears is much more difficult on a rail car than on an automobile, because the spinning weights are much heavier. In an average sized automobile the spinning weight, including clutch, weighs about 15 lb., but in the case of a rail car of 75 hp. this weight already amounts to 165 lb.

On the other hand, in the case of the rail vehicles there is no elastic medium between the wheels and the rail, as

in the case of the automobile between the wheel and the road. The rubber tires of our automobiles facilitate gear shifting in so far as in case of clashing the flexibility of the tire relieves the shocks. Rail cars, moreover, generally are required to run in both directions, which further adds to the difficulties of gear shifting as compared with the automobile. As rail cars are up to 55 ft. in length, mechanical shifting through rods or cables involves considerable difficulty. The usual sliding bar arrangement of automobiles is therefore not used on rail cars, but special types of change gears have been evolved which greatly facilitate shifting.

Three Change Gears Systems

At the present time there are three systems of change gears on the market which are illustrated diagrammatically in Figs. 5, 6 and 7, and are referred to as Systems I, II and III.

In changing from a lower to a higher speed, little difficulty is experienced as a rule with any of the three systems, although the number of operations is the least with System I, the operation of which therefore is the simplest. However, it is not so much a question of the number of operations as whether these succeed under all conditions. The operations should really be divided into two classes, namely, positive and non-positive operations, which latter do not always succeed.

Much more difficult than changing up is changing down to a lower speed. This involves considerable difficulties, especially with System III. Let us assume that a rail car fitted with this system is running up hill and that the fourth speed does not give sufficient torque any more, the engine as well as the car having gradually come down in speed. Let the normal speed on the fourth be 32 m.p.h. and let the speed have come down to 20 m.p.h.; then it is not advisable to continue in fourth gear any longer, and the gear should be changed to third.

In order to accomplish this with System III, the main clutch on the engine is opened and it is then possible to unmesh the smaller one of the sliding pinions. The larger one of the pair of pinions must now be meshed with wheel *b*. This is where the difficulty comes in, as the pitch line velocities of the two gears are different, that of wheel *b* being only one-half that of pinion *a*. Therefore, the two gears cannot be meshed directly. Pinion *a* is directly connected to the mass of the car and its velocity cannot be influenced. Wheel *b*, on the other hand, is connected to the driven member of the clutch.

There is no other way out, therefore, than to let the clutch in again, speed up the engine by opening the throttle, and thus bring up the pitch line velocity of *b* until it is the same as that of *a*. When this has been accomplished the clutch is disengaged again and pinion *a* is meshed with wheel *b*. It will thus be seen that this change from a higher to a lower gear, if made right, is quite complicated. It may be pointed out that in the diagram of System III only two changes of gear are shown, while in reality four are usually provided.

Now let us consider System II. We will again assume that the car is ascending a grade and is gradually coming down in speed because the fourth gear is too high for this grade. In this case, too, only two speeds are shown, instead of the four actually provided. If it is desired to change from the higher to the lower speed, clutch *c* is disengaged and clutch *d* engaged. To do this, however, the speed of the outer drum must first be brought up to that of the inner cone of clutch *d*. This is accomplished entirely automatically, because the engine is freed of its load by the disengagement of clutch *c* and its speed increases almost instantly from about 500 to 1000 r.p.m., so that after a short time the speeds of the inner and outer cones of *d* are substantially the same. The whole operation of gear changing therefore consists in only two operations, namely, disengaging of clutch *c* and engaging of clutch *d*. In reality there is only a single operation, as clutch *c* is disengaged and clutch *d* engaged by the manipulation of a lever. The throttle lever remains in the full open position, where it should be while ascending grades.

Hand or Air May Be Used

This operation of disengaging one and engaging another clutch may be performed either by hand through suitable linkage, or by compressed air. As on rail cars compressed air is always available, because it is used for the brakes, it is quite convenient to effect the change of gear by means of air cylinders. The whole process of changing from one gear to another then consists in moving the control lever from one position to another. It can be shown that a six-cylinder engine, which naturally has a comparatively light flywheel, can accelerate from 500 to 1000 r.p.m. in about a second, and this is substantially the time required for the shifting operation.

A transmission intermediary between Types I and III is that of Type II. With this system, too, the teeth remain in mesh constantly, the same as with System I, and changes of gear are effected by disengaging and engaging different small friction clutches. The operation of changing gear therefore is quite similar to that of System I, except that speeding up of the countershaft is effected not by means of the main clutch but by a small auxiliary clutch *k*. The operation therefore in this case is somewhat more involved than in the case of System I, though simpler than in the case of System III, and the time required for effecting the change will be longer than with System I. The shorter the time required for the change the more nearly ideal the system.

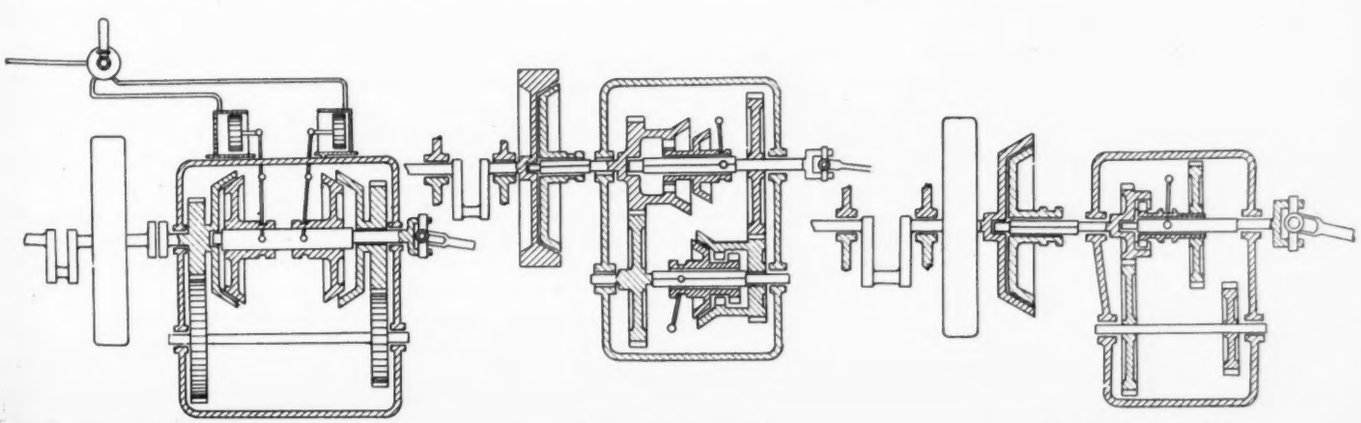


Fig. 5—System I

Fig. 6—System II

Fig. 7—System III

In order to get a clearer view of the operations necessary for changing gear with the different systems, they are tabulated below:

Forward Speeds

System I	System II	System III
1. Declutch	Declutch	Declutch
2. Close throttle	Close throttle	Close throttle
3. Let in clutch	Disengage jaws	Unmesh gears
4. Open throttle	Use clutch brake	Mesh gears
5.	Engage jaws	Let in clutch
6.	Open throttle	Open throttle

Reversing

1. Declutch	Declutch	Declutch
2. Let in clutch	Disengage jaws	Close throttle
3.	Use clutch brake	Unmesh gears
4.	Engage jaws	Let in clutch
5.	Let in clutch	Open throttle
6.	.....	Declutch
7.	.....	Mesh gears
8.	.....	Let in clutch
9.	.....	Open throttle

It will be seen from this tabulation that change of gear is much easier with System I than with the other two systems, and that System II is in turn handier than System III. It may here be pointed out that changes of gear must be made much oftener on rail cars than on automobiles, for in the case of a rail car with trailer it is usually necessary to go to a lower speed when a grade of 1 per cent is encountered. Now, grades of 2, 3 and even 4 per cent are quite common.

The reason for the more frequent gear shifts in the case of the rail car lies in the less favorable relationship between engine power and vehicle weight. In the case of an average passenger automobile the engine generally develops 1 hp. to every 80 lb. vehicle weight; in the case of a rail car with trailer, only 1 hp. to about 800 lb. of vehicle weight. Under otherwise equal conditions the rail car therefore must shift on a 1 per cent grade, where the automobile needs to shift only on a 10 per cent grade.

But, as stated, the number of operations to be performed in effecting the shift is not the only factor, much depending upon whether these operations succeed in every instance. It is well known that in the case of the automobile type of transmission, represented by System III, it is not always possible to mesh the gears, in which case there is clashing of the teeth. Engagement and disengagement of the clutches with System I is always positive, even though the speeds of the two parts to be connected are not quite alike. Engagement of the jaws with System II is not always positive, even though the jaws offer the advantage that the spaces can be made wider than the jaws, which facilitates the engagement.

Frictional Work Not Greater

It might be objected to System I that it requires four friction clutches and that some of these clutches must transmit larger torques than the single clutch in System III. The answer is that while the torques to be transmitted are greater, the frictional work is not. With respect to the frictional work, it makes no difference whether the clutch is located directly behind the engine or behind the change gear.

If a transmission according to System I is more expensive than one according to System III, its operation is so much easier. Other advantages of System I are that the frictional work of clutching and unclutching are divided between four clutches and these clutches are independent of each other, so that even if one clutch should become defective this would not prevent the car from being operated. This system is also well adapted to remote control, and 12 cars with a transmission according to System I are in service on the Dutch State Railways.

Of the three transmission systems, Systems I and III are quite familiar to the automobile engineer, the former being the so-called individual clutch type much used during the early years of the industry, and the latter the modern automobile transmission or selective sliding gear system. System II is a more recent development. It is known as the Mylius system and is being used in Germany on the rail cars of the Hannoversche Waggonfabrik A.-G.

The individual gears are engaged by means of jaw clutches. In the case of a transmission for a rail car, with its heavy spinning weights, there is ordinarily considerable difficulty in engaging the jaw clutch. This has been eliminated in the Mylius transmission by providing each gear with a special clutching brake which automatically equalizes the speeds of the gear and the shaft before they are locked together by the clutch. The shifting operation is effected by compressed air.

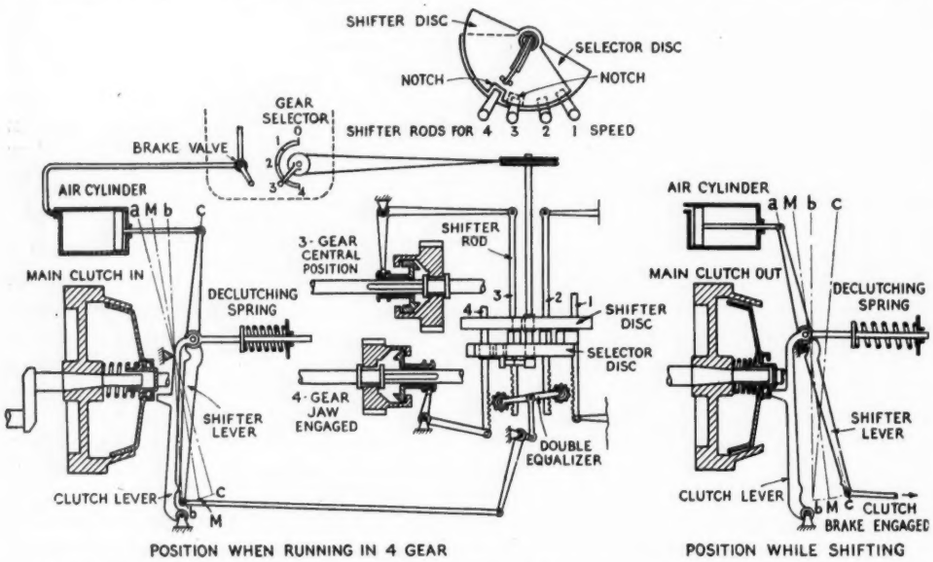


Fig. 8—Diagram of Hannomag automatic control of mechanical transmission

A diagrammatic view of the Mylius transmission is shown in Fig. 8. At the left the end of the crankshaft is indicated, whence the power is transmitted to the gearset by means of the conventional friction clutch. A sectional view of the transmission itself is shown in Fig. 9. The power enters the transmission at the left hand end of the upper shaft and leaves it at the right hand end of the same shaft, this shaft being in three sections.

It will be noticed that the transmission housing is divided into three compartments by partition walls. In the compartment at the left are located the set of three gears for the reverse. There are also two jaw clutches in this compartment, which are interconnected. If the upper jaw clutch is engaged the drive is forward, whereas if the lower one is engaged the car runs backward. The advantage of locating the reversing gear ahead of the second reduction gears is that in that case the drive on

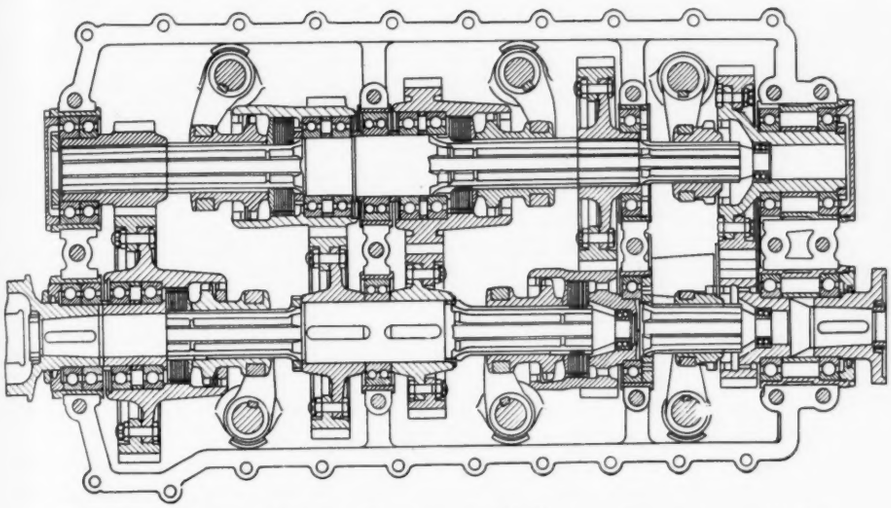


Fig. 9—Sectional view of Hannomag (Mylius) rail car transmission

the latter comes on the opposite faces of the teeth for the two directions of car motion, and in rail car work, where both directions are equally used, this should add materially to the life of the transmission.

This transmission gives four forward and four reverse speeds. In addition to the two positive clutches in the reverse gear compartment there are two combined positive clutches and clutching brakes or multiple disk clutches in each of the other two compartments.

Operation of the gear is as follows: At each end of the car there are provided an air brake valve and a gear selector lever. From the operator's brake valve an air line leads to the air cylinder of the clutch. The gear selector acts through a gear and a drum with cam groove upon the shifting mechanism of the transmission in such a manner that before the first speed is engaged either the forward or the reverse jaw clutch will be engaged. The selecting mechanism (shown in the upper part of Fig. 8) consists of two parallel disks, of which the second is moved around after the engaged gear has been released.

In Fig. 8 the fourth or high gear is shown engaged. Now let it be supposed that the car is approaching a grade which will make it necessary to shift to third. The operator moves his selector lever to the position for third speed, which results in a corresponding rotary motion of the shifter disk. There is a separate shifter rod for each gear. The shifter rods are provided with fingers which are adapted to enter slots in the disks when these are in the proper positions. All of the shifter rods are interconnected by a double rack equalizer and are operated from the clutch linkage. Only the third and fourth speed gears and their connections are shown in Fig. 8 and the small multiple disk clutches acting as brakes are indicated as cone clutches for the sake of simplicity.

The shifter disk, operated by the selector lever, now stands in the position corresponding to third speed, while the selector disk is being held by the finger of the fourth gear shifter rod in the position corresponding to the fourth speed, so that the spring between the two disks is under tension. When the moment arrives that the gear has to be changed the operator opens the brake valve, thereby causing the air to escape from the clutch cylinder and allowing the declutching spring to act. The clutch lever is pressed to the left and opens the main clutch, which is represented as a cone clutch in the drawing but in reality is of the multiple disk type.

The clutch lever carries along the connected shifter lever, which turns around its lower end until it has reached the position *b-b*, which is determined by a stop against which the middle of the lever abuts. A further motion of the declutching spring does not result in any further motion of the clutch lever, as the point of attack of the declutching spring is very close to the new fulcrum of the shifter lever. On the other hand, the lower end of the shifter lever now moves and acts through the connecting link and the double equalizer upon all of the shifter rods of the transmission, tending to move them along.

The shifter rods of the first and second speeds are locked in position, their fingers being located between the disks, but rods *3* and *4* are free. Finger *4* leaves the slot in the selector disk and moves into the space between the two disks. At this moment the spring pulls the selector disk into the same angular position as the shifter disk, so that the slots in both disks are in line with the finger of the third speed shifter rod. The third speed shifter rod, under the influence of the declutching spring, first moves into the shifter disk. Through this motion the clutch brake of the third gear is engaged and the two shafts that are to be coupled together are brought to the same speed.

After a few seconds the operator admits new compressed air into the clutch cylinder, and the succession of operations is then the exact reverse. The clutch linkage first tries to pull back all of the shifter rods. But now the shifter rod of the fourth gear also is between the disks. Only the jaw clutch of the third gear can be moved. The clutch brake is released again and the clutch collar is moved to the left until the members of the positive clutch engage noiselessly.

In the meantime the shifter lever has returned to the position *b-b*. Further motion of the piston in the air cylinder under the pressure of the entering air results in gradually engaging the main friction clutch. The view

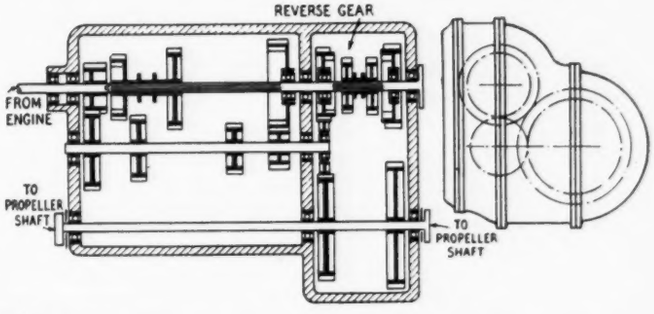


Fig. 10—Diagrammatic view of transmission used on rail car of German works

at the right in Fig. 8 shows the position occupied by the shifter lever at the moment of shifting; the dotted lines show its gradual change of position. The entire operation of gear shifting was effected automatically after the operator selected the third gear and operated the clutch by means of the air valve, although operation of the valve must be effected in a definite manner for best results.

The German Works, which operate the reorganized former arsenals, also build a rail car which has some interesting features. In this car the powerplant is mounted on a separate frame at the middle of the car which is hung from the two trucks at the ends. The mechanical transmission used on this car is shown in Fig. 10.

New Zealand Motor Market Is Improving

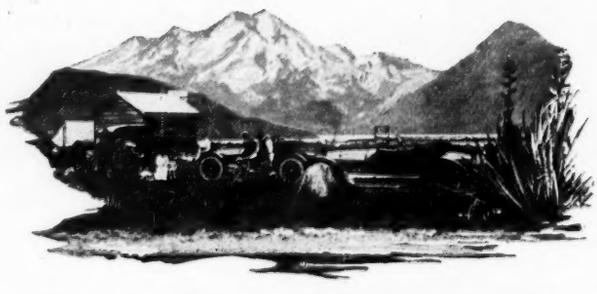
Going is hard in many parts of New Zealand. The new road building program, which has just been inaugurated, however, will add hundreds of miles of good roads to the already good mileage possessed by the island

Better highways and means of financing time sales are making Dominion better market for cars. British competition is increasing.

RECENT major increases in good roads mileage and the beginnings of local facilities for financial retail time sales are combining to make New Zealand an even better market for motor vehicles in the next few years than it has been in the past, in spite of the fact that already it has one motor vehicle for every 11.8 persons—more than any other country except the United States.

Coupled with these factors favorable to American as well as other exporters, however, is the increasing effort being made by British manufacturers to get business in this territory. A large proportion of the cars now being operated in New Zealand are of American manufacture, but the increased representation of British cars at the last show held at Christchurch is evidence of the fact that keener competition for business is to be expected in the future than has been common in the past.

The long standing importance of New Zealand as a market for American automotive products has made its customs and possibilities familiar to American exporters. But changing conditions here, as in other territories, make advisable close attention to current trends in order to get the greatest possible results.



The automobile in New Zealand has reached the utility stage; it has long since passed the luxury stage. Many farmers use cars as part of their necessary equipment just as they do in the United States

Latest registration figures for New Zealand show a motor vehicle population of 103,000. According to the 1921 census, the latest one available, the population of the Dominion was 1,219,000, which indicates one motor vehicle for every 11.8 persons, as compared with 6.5 persons per vehicle in the United States.

A very large proportion of the motor vehicles in New Zealand are of American manufacture. Of the total imports during 1923, American made cars, including Canadian, accounted for 93 per cent. This ratio is typical of the hold American manufacturers have had in New Zealand ever since that country appeared as a market for motor vehicles. Present indications are that in the future American makers will have considerably more competition in the Dominion from British manufacturers.

Prior to 1922 little notice of New Zealand as a possible market for motor vehicles was taken by English exporters. Since that time, however, British production costs have been lowered, models have been especially designed for Colonial use, and strong efforts have been made to capture at least a portion of this market.

That these efforts have not been in vain is evidenced by the showing made by British cars at the last Olympia held at Christchurch. British cars represented 24 per cent of the total cars shown while American cars were 74 per cent, a gain in British representation. This, of course, does not mean necessarily that fewer American cars are being sold than formerly, but it does mean that American dealers are not getting such a big proportion of the new business.

A factor which should have a strong influence on the ease of making new sales is the institution in New Zealand of finance companies to assist in handling time sales. Up to a short time ago practically all sales were for cash. Such time sales as were made depended upon the unaided ability of the dealer to finance the deal, thus effectually

preventing any important development of this phase of automotive merchandising. Recently, however, several companies have started operation in the Dominion and are financing car sales much in the same manner as American finance companies.

When one considers the tremendous value of time payments in increasing car sales in this country it is easy to believe that this single factor will do much to make New Zealand a more important market than it has ever been before. With the number of cars already in operation, the New Zealanders are pretty well sold on the value of the automobile as a transportation unit. In fact, the population now has about the same attitude toward the utility value of motor vehicles as the people of this country.

Probably a considerable part of the popularity of automobiles in New Zealand is due to the increasing amount of good roads being constructed under the supervision of the Highways Board, which was brought into being when the Main Highways Bill became a law some three years ago. Under the policy laid down by Parliament all main roads or roads that have been designated as principal highways come under the supervision of the Highways Board for both construction and maintenance.

The Board provides half the cost of construction and a third of the cost of maintenance. The rest of the cost is found by the local bodies through whose territories the roads pass. The Highways Board receives its share of the funds from the Government, partly from consolidated funds and partly from direct taxation of motor vehicle owners. Direct motor taxation is now providing about $2,500,000 per year, made up of license taxes, tire taxes and heavy traffic taxes.

Funds received from heavy traffic taxes are not expended by the Highways Board but are allocated to the various local bodies, which are required by law to use all of this money on the roads in their jurisdiction.

Although the Board has been operating but a short time and has only just begun to receive funds for carrying on its work, there has already been a noticeable improvement in road conditions. New Zealand now has many stretches of fine tarred roads and within five years it is expected that practically all main roads will be tar-sealed or bituminized.

The relative popularity of motorcycles and automobiles has followed the same cycle in New Zealand as in this country. During the years from 1915 to 1919 inclusive total imports of motor vehicles into the Dominion were 27,343 cars and 8566 motorcycles, a ratio of about 3 cars to 1 cycle. During the succeeding five years, from 1920 to 1924, the rate of car importation practically doubled, total imports being 52,484. During the same period importations of motorcycles increased only to 9053, a ratio of about 5½ cars to 1 motorcycle.

Care Required in Spot Welding Operations

SOME pointers on spot-welding, particularly as used in the manufacture of automobile bodies, were given by J. W. Meadowcroft of the Edward G. Budd Mfg. Co., in a paper read before the American Welding Society at its annual meeting in New York.

Mr. Meadowcroft pointed out that in order to produce first class welds with the spot welding machine the latter must be carefully inspected before beginning work. The contact plugs in the switches should be checked up to make sure that they are uniformly spaced and that the copper contact plugs have a flat face at the contact points, so that all unnecessary heating of switch parts is avoided. This will eliminate the risk of burning the fibre and thereby causing the switch to fall apart. The operator should also make sure that all copper dies are set the proper distance apart, that the proper pressure is applied at the welding points, and that the welding points are kept at the proper diameter to correspond to the gage of metal being welded.

When the dies are being set, the toggle on the machine should be checked up to see that it is in its proper relation to the die points to give the necessary pressure. Electric welding machines should never be operated if the points are hot. If the points do become hot the water circulation should be checked, as well as the length of the copper tube. One possible reason for defective cooling is that the water circulation system is clogged by dirt, and another that the copper tube is too short and a pocket forms in the water shank holder, causing the latter to heat, with the final result that circulation through the die points is stopped and burnt welds are produced.

The length of copper tube should be carefully checked, especially when the dies are being changed, because variations in the depths of holes in various types of copper dies may cause trouble.

Hand-operated machines are so constructed that the handle can be easily and quickly adjusted, and each operator should always make the necessary adjustment, to assure himself that he is producing a standard spot weld.

If the operation requires a treadle, the latter should be so arranged that either foot can be used on it without the operator losing his balance. The result of the operator losing his balance or position usually is the loss of a number of spot welds, as there is then uncertainty as to the amount of pressure.

Not only must the machine be properly fitted up to produce a high standard of spot welds, but the pieces which are joined together must be fitted properly before they are spot welded. Much stress is being laid on so designing the various products that they can be welded successfully, and to maintain a standard in welding the pieces must be so formed—regardless of shape or size—that they can be successfully welded with little pressure application and low current consumption. Many failures of spot welding are due to lack of a proper fit of the pieces welded, rather than to the process itself.

On electric spot welding machines the switches are so designed that the pressure can be applied before the current is switched on, and although this is a good feature and works out very successfully, it will not do to force the parts together too hard in order to ensure a good weld, as they may then be forced out of shape.

Pieces which are shaped, or have contours, are much more troublesome to spot-weld, especially if the pieces do not fit properly, as the condition and quality of welds made on irregular shapes depends on the position in which pieces are held while spot welding. Many times very deep indentations are made because of pieces not being held in their proper position for welding. This not only gives a poor weld but it also calls for a vast amount of extra finishing, which is very costly. On some interior parts, however, which are not exposed, the finishing would not be considered. Another condition also exists in spot welding irregular shapes and that is, holding the various shapes of pieces to the proper contours. Many times pieces will change considerably after placing numerous welds on same, and unless steps are taken to change the shape or contours of pieces to allow for this contraction, the welded pieces will not be the proper shape. This is much more economical than to simply spot weld the pieces together regardless of shape.

Books for the Business Bookshelf

Keeping Workers Healthy

THE job of keeping industrial workers in good health and free from accidents is an important management problem. A complete manual on the best methods for accomplishing these results is provided in "Health Maintenance in Industry," written by J. D. Hackett and published by A. W. Shaw Co. It describes the sicknesses and injuries which cause absence, lost time and inefficiency and points out how medicine, surgery, hygiene and sanitation may be employed to counteract their effects. The book is written in clear, non-technical language and tells just what an employer should do to install and maintain a successful medical department. It discusses the organization of a medical and nursing staff, methods of treating various sicknesses and injuries, plant ventilation, heating and lighting and plant sanitation. Practically everything that influences the physical well-being of factory workers is covered in a manner that will permit the reader to make immediate use of the information in his own plant.

Motor Bus Operation

OPERATORS of motor buses now have a manual of procedure to serve as a guide in making the conduct of their business more satisfactory to them and to their patrons. In "Bus Operating Practice," published recently by the International Motor Co., Roy Hauer and George H. Scragg have collected and arranged a great deal of valuable information on successful bus operation. The book covers all the phases of the bus business, including selection of profitable routes; securing the right to run; establishing passenger terminals and waiting rooms; selling bus service; operation of buses; obtaining indirect and supplementary revenue; cost keeping methods, and selection of equipment. Each of these subjects is discussed clearly and in considerable detail so that not only can present operators of buses find much valuable information but persons who are contemplating bus operation will find the answers to most of the questions that confront them.

Trade Associations

THE recent Supreme Court decisions concerning the activities of the Maple Floor Manufacturers' Association and the Cement Manufacturers' Association have done much to make clear to the automotive industry just how far such work can be carried legally. In "Trade Associations—Their Economic and Legal Status," a study made by the National Industrial Conference Board, manufacturers will find a great deal of additional information about trade association activities. This book deals with the legal and economic aspects of associations, particularly with their influence upon independent business enterprises. It is not intended to be a manual of association activities or a guide as to what may or may not be done under existing rules of law, but is rather a broad study of public policy in relation to the economic processes which underlie the organization and methods of American business. Reviews of legal doctrines and surveys of practical accomplishments of trade associations have been kept secondary to the main purpose of describing the development and testing the soundness of our present laws for regulating business activities.

Filene's Model Stock Plan

THE Model Stock Plan under which the Filene store in Boston has attained such successful operation has for its purpose the provision of the right goods, at the right time, in the right quantities, and at the right places. The method used seems to be similar to that used by Ford—first set the price at which the greatest quantity of goods can be sold and then provide goods that will give the best possible value at that price. Edward A. Filene in "More Profits from Merchandising" published by A. W. Shaw Co., Chicago, describes the application of the Model Stock Plan in his store and also offers some valuable suggestions for using its principles in obtaining more profitable operation of other types of merchandising enterprises.

New Edition of German Handbook

ONE of the oldest technical works on the design and manufacture of automobiles, the Automobiltechnisches Handbuch, published by M. Krayn of Berlin, has appeared in its eleventh edition. The new volume has been completely rewritten and has a larger size of page (5½ by 8 in. instead of 4 by 6¼), which has made it possible to make the illustrations clearer and the text more readable.

As has become customary in the production of engineering handbooks, the text has been contributed by a considerable number of specialists, which naturally adds to the authoritativeness of the information furnished. The new edition was prepared under the editorship of Richard Bussien, who also edited the tenth edition.

An idea of the enormous amount of material contained in the new edition may be given by stating that there are approximately 1100 pages of text in fine print and about 1100 illustrations. The usual mathematical tables and chapters dealing with the general principles of mechanics are omitted. Considerable space is devoted to automobile standards, and besides lists of extracts from German general industrial and automobile standards, lists are given of British automobile standards and reference is made also to the standardization work which has been done in America, particularly by the S. A. E. The new edition can be recommended to all automobile engineers who read German.

EDITORIAL

Capacity and Production

THE production capacity of the automotive industry will be considerably larger by the end of 1925 than it was at the beginning. Despite generally conservative programs on the part of manufacturers and despite the fact that total production for the first of the year was just about the same as for the first half of 1924, certain manufacturers have found it necessary to increase facilities to meet the demand for their particular product.

As a result there is every indication that facilities will be available at the end of this year for producing motor vehicles at the rate of about 6,150,000 a year. This is something like 2,000,000 in excess of production estimates likely to be made for 1926.

In discussing the relation of capacity to demand, however, total figures alone do not give an accurate basis for judgment. Some companies need expansion to take care of greater sales, while the gap between capacity and demand may widen in other instances. In any case, there seems to be little chance that 1925 will see any material contraction of the difference between production capacity and potential demand for the industry as a whole.

Difference in Superchargers

TWO types of air pump have been used for superchargers, the centrifugal and the Roots blower. At first sight there appears to be no reason why one should be preferable to the other, but when it is considered that the delivery characteristics of the two vary quite differently with the engine speed it will be realized that the results obtained also are quite different.

A Roots blower, which acts on a principle similar to that of the gear pump, delivers air in almost direct proportion to the engine speed. The delivery does not increase quite as rapidly as the speed, for the reason that, the same as with a reciprocating engine, not the whole of the displaced volume is filled with air to atmospheric pressure; when the speed is very high the time available is not sufficient to allow of this, and the delivery per revolution is then proportionately decreased. On the whole, however, this type of pump gives a straight line "delivery curve."

With a centrifugal type of blower, on the other hand, the delivery through a constant passage increases much faster than the speed. The pressure created by a centrifugal blower depends upon the load against which it works, but it varies roughly as the square of the speed. Hence a blower which gives an over-pressure of, say, 10 lb. per sq. in. at 3000 r.p.m., would give very little over-pressure at 1000 r.p.m. and it therefore would be of no use in heavy pulling.

It is probably for this reason that firms which use superchargers on racing engines only employ the centrifugal type of blower, whereas when the supercharger is used on stock vehicles also the positive displacement type of blower is preferred. It adds to the power under all conditions of engine speed, which the centrifugal type does not.

Thermostatic Control

AUTOMATIC control of the cooling system temperature can be effected in two ways, by modifying either the flow of the water or the flow of the air through the radiator. In the past the former has been commonly employed, but there seems now to be a tendency to give preference to the latter. As long as the water entering the jacket is kept at the same temperature it cannot make any difference, so far as the performance of the engine is concerned, whether control is effected by restricting the air flow or by by-passing the water, still there are differences in the operation of the two systems.

It is obvious that if in starting the engine the water is by-passed, the jackets will attain their normal temperature more quickly than if it circulates through the radiator from the start, simply because in the latter case the whole of the water in the cooling system has to be brought up to the working temperature against only a fraction in the former case.

The weakness of the by-pass system is that it exposes the radiator to freeze-ups in cold weather. Without a thermostatic valve in the cooling circuit, after the engine is shut down the water will continue to circulate through the system as long as the temperature of the cylinder block is appreciably above that of the atmosphere, and this naturally protects the radiator against freezing in cold weather. But with a thermostatically controlled valve, circulation ceases almost immediately after the engine is shut down.

It is true that freeze-ups should be guarded against by filling the cooling system with a non-freezing solution as soon as cold weather sets in, but operators are human and prone to procrastinate, and a good deal of trouble is still experienced during unexpected early cold snaps, or if the alcohol solution is allowed to become too dilute. With an automatically controlled radiator shutter there is, of course, much better protection against radiator freeze-ups, in cold weather operation.

If the automatically controlled radiator shutter should take the place of the automatically controlled by-pass valve it can only be concluded that in the estimation of designing engineers protection against radiator freeze-ups is of more importance than a moderate gain in the rate of reaching normal operating conditions when starting from cold.

Our Industry Today

Price Reductions and Appearance of New Models Stimulate Automobile Sales — Best July in History

NEW YORK, Aug. 5—July was one of the best months the automobile and allied industries ever experienced. Sales were not as high as in June but they were better than any previous July, so much so that the prediction is already being made in some quarters that the whole of 1925 will set a new record.

The introduction of new models and the lowering of prices during the last week or two has produced the expected stimulus to the sales of the companies concerned, and an excellent volume of business for August is promised. More than the ordinary interest in new cars has been shown by the public.

Stocks in dealers' hands are in good condition, and in only one or two spots in the South and West is any difficulty being experienced in keeping used cars moving. The number of old models on dealers' floors at this time is the lowest yet recorded.

A survey shows a majority of the manufacturers genuinely optimistic and making plans accordingly. Others are not so favorably placed. It might be said with reasonable exactness that the automobile manufacturers who were rushing production the first part of the year are still unable to catch up with orders except to a small degree. Some are still unable to make deliveries within two months.

There is quite a gap between the leaders and those farther down, whose production is now only about 60 to 70 per cent of capacity.

Truck business is keeping well ahead of last year, and exports are increasing.

In parts, accessories and service equipment good business is reported, with New England and the Far West particularly strong. The touring season has been especially active in these sections and has had a naturally favorable reaction on sales by dealers and service stations.

On the whole, the sound condition of agriculture seems to be the predominant factor in the automotive situation. Farmers are buying automobiles and tractors as they never have before. They are getting good prices for crops, and crops have been large. This applies with particular force to the truck and fruit farmers of the South and West. General business, while showing the normal seasonal slackening, has yet been good enough to keep the urban populations in the market for new and used cars.

The high average of sales is also probably due to some extent to the prevailing tendencies to introduce more liberal terms in the financing of transactions on the deferred payment plan.

Optimism Features National Reports

Outlook Is Favorable and Existing Conditions Satisfactory Throughout U. S.

Optimism rings in the reports from correspondents of AUTOMOTIVE INDUSTRIES in every section of the country as they view the future and describe existing conditions in the industry. These reports are as follows:

New England

Boston distributors and dealers did not experience the expected "seasonable slump" in July. Sales slowed a trifle, but were steady. Business in New England territory has been better. July of 1925 was unsettled because of new announcement rumors which this year have been at a minimum. Used car stocks have been taken off the floors so that salesmen are not balked in their quest for orders for the 1926 lines.

Eastern

From Philadelphia, Harrisburg and key cities of this territory come reports of slight recession in sales of new cars, but the level is equal to that of last year. Medium priced cars are selling best in Philadelphia and used car sales are in smaller volume than last month. Business conditions are good and production is holding its own. Prospects for late summer and fall are particularly good. Harrisburg reports July sales better than those of that month a year ago, although a slight decline from June records is admitted.

Buffalo and Rochester announce a slight seasonable decline, with July sales far exceeding those of the same month in 1924. The outlook for August is said to be fair. Business slowed up due to the waiting policy of prospects who desire to see the new models. Dealers are not overstocked. Predictions optimistic.

Middle West

Automotive trade conditions in Chicago are as good, if not better, than they were in June. Many distributors report sales in excess of those in July, 1924, the ratio of advance being from 50 to 100 per cent. The used car situation is negative. The decline in stocks on hand became noticeable last month. The credit situation is encouraging. Accessory volume is running 25 to 50 per cent better than in July, 1924.

In Cleveland manufacturers have established a new record for six months. Sales have increased 50 per cent over the same period in 1924 and were 30 per cent over the previous record-breaking year of 1923. More than 18,000 new cars were sold in six months, while used car sales amounted to 40,000. Accessories are going well. Prospects look good for the late summer and fall.

In Akron there was a decline of from 15 to 20 per cent in July compared with June. Business is still above that of last year at this time. Sales during the last six months of 1925 are expected to exceed those of the same period in 1924, but will not equal the first six months of this year. Reports from Columbus show steady sales, virtually as good as those of June. Used cars have been selling slowly. In Toledo, the situation is excellent. July, 1925, was better than the same month last year and many dealers say August will bring a 25 per cent gain over the same month of 1924. Employment is on the increase and farm buying is expected to gather momentum in the fall.

Cincinnati business equalled that of a year ago. Industrial conditions show improvement. The used car market is stronger and accessory dealers report good turnover. Indianapolis reports a slowing down of new car sales. Excellent agricultural conditions point to an increase in August and through the fall. Buyers are waiting for new models. Louisville reports satisfactory conditions with promising outlook. In Baltimore, where July is a dull month, the automotive trade continued brisk.

Northwest

A check in the sales slump and the beginning of a quick recovery are expected in Milwaukee. New car sales slowed in the spring, but June showed a come-back and now it is freely predicted that sales for the last six months of 1925 will be greater in volume than any of the past three years. In Des Moines and vicinity business continues at a steady pace, with July sales ex-

(*Continued on page* 231)

Hoover to Take Up Rubber Situation

Secretary of Commerce Expected to Take Action After Studying Facts

WASHINGTON, Aug. 6—Herbert Hoover, Secretary of Commerce, is expected to take an active part in the rubber situation this week. After studying the latest developments it is anticipated that the Secretary will cause the renewal of conversations with the British authorities with reference to the amount of crude rubber releases permitted under the Stevenson restriction act.

Despite American protests transmitted through the State Department to Ambassador Houghton in London, the British authorities restricted the amount of the release due for the quarter beginning Aug. 1 to ten per cent, or half the amount desired by American manufacturers.

Recall British Promise

It is understood that British producers gave assurance two years ago that the Stevenson plan would be flexible to safeguard the United States from any shortage. Mr. Hoover is expected to recall this point to British attention and to emphasize the conviction of American manufacturers that they are better able than the British to judge their needs for crude.

The Department of Commerce is conducting surveys of possible new fields for rubber production by American interests. The report covering the Philippines is due next week.

One Liner Loses Race with Big Rubber Cargo

NEW YORK, Aug. 6—The steamship Kansas, last of three vessels which raced here from Singapore in an effort to land 6500 tons of crude rubber, valued at $14,000,000, before midnight, July 30, came into port the only loser of the three. The Menelaus and the Siberian Prince, its competitors, both arrived on time.

Because of the failure of the Kansas to reach port before Aug. 1 brokers who had contracted for July rubber deliveries were forced to buy some of the rubber necessary to fill their contracts on the open market, with consequent losses.

FORESEES RUBBER RELIEF

LONDON, July 30 (*by mail*)—In approving certain concessions regarding the assessment of standard rubber production, the British Colonial Office expressed the opinion that these concessions coupled with the recent releases of uncouponed rubber will materially ease the present tight situation.

OHIO UNIVERSITY WILL HAVE INDUSTRIAL CLASS

COLUMBUS, OHIO, Aug. 6—E. A. Hitchcock, dean of the College of Engineering at Ohio State University, announces that this fall there will be inaugurated a department of Industrial Engineering connected with the College of Engineering at this University.

At the head of the department will be John Younger, formerly Chief Engineer, Truck Division, Pierce Arrow Motor Car Co.; Chief of Engineering Division, Motor Transport Corps, and Vice-President, Standard Parts Co.

It is felt by the engineering faculty that students of engineering today need a training in the fundamentals of production engineering and administration. Problems of factory location and layout, problems of the grouping of tools and processes, of time study and the study of design of proper fixtures are all matters that will come under consideration in this new department.

Converse Rubber Co. Gets $50,000 Order for Tires

BOSTON, Aug. 6.—An increased working schedule has been put into effect at the Malden plant of the Boston Rubber Shoe Co. The company now goes on a five-day schedule weekly, after having been on a schedule of four days for several months. This new order affects all but the bootmaking department.

It is understood that the Converse Rubber Shoe Co. of Malden has been awarded the contract by the City of New York for supplying the motor vehicles of that city with tires during the ensuing year, the total value of which will approximate $50,000.

INDIA USES LESS RUBBER

WASHINGTON, Aug. 6—Imports of rubber manufactures into India during the fiscal year ending March 31 last were valued at Rs. 15,497,429, according to statistics forwarded by Assistant Trade Commissioner Don C. Bliss, Jr., to the rubber division of the Department of Commerce. This total shows a continued decline from the imports valued at Rs. 18,019,646 in 1922-1923, and Rs. 16,796,394 in 1923-1924. This decline may be attributed to a decrease in unit values rather than to any market dimunition.

BRITISH TIRES ADVANCE

LONDON, July 30 (*by mail*)—Effective Aug. 4, tire prices throughout the United Kingdom will be advanced 15 per cent, according to an announcement by British manufacturers.

Prices Reduced on Studebaker Models

Star and Gray Also Cut in Accord with Earlier Announcements of Other Companies

NEW YORK, Aug. 6—Notable price reductions have marked the news coming from automobile manufacturers during the past week. This, together with the appearance of 1926 models, has had a tendency to arouse country-wide interest and bring about a corresponding increase of sales.

Previous announcements told of price reductions on the Cadillac, Paige-Detroit, Willys-Overland, Buick and Chevrolet.

Announcements this week were as follows:

Studebaker Corp. Reduces

Studebaker Corp. has reduced prices $50 to $405 on various models. New and old prices compare as follows:

Standard Six:	New	Old	Change
Coach	$1,195	$1,295	$100
Country club coupe	1,295	1,345	50
Sedan	1,495	1,595	100
Special Six:			
Duplex roadster	1,395	1,450	55
Sport roadster	1,595	1,645	50
Duplex phaeton	1,445	1,495	50
Coach	1,445	1,595	150
Brougham	1,695	1,795	100
Victoria	1,750	1,895	145
Sedan	1,895	2,045	150
Big Six:			
Duplex phaeton	1,795	1,875	80
Coupe	2,045	2,450	405
Brougham	2,195	2,575	380
Sedan	2,245	2,575	330
Berline	2,325	2,650	325

Star Roadster at $525

Durant Motors, Inc., has just announced Star price reductions ranging from $15 to $55 on all models. No changes in design or equipment furnished accompany this price cut. The following is a table showing new and old prices on all models.

Model	New Price	Old Price	Reduction
Roadster	$525	$540	$15
Touring	525	540	15
Coupster	595	625	30
Coupe	675	715	40
Coach	695	750	55
Sedan	775	820	45

Gray Prices Are Cut

Reduction of prices effective Aug. 1 have been announced by the Gray Manufacturing Co. (formerly the Gray Motor Corp.) on the Gray touring, three-passenger coupe and the sedan.

The new prices are touring, $595; three-passenger coupe, $825, and the sedan, $845. Balloon tires, artillery type wheels, and combination stop and tail light have been added as standard equipment without additional cost.

BRINGS OUT ARMORED POLICE CAR

PATERSON, N. J., Aug. 6—The Interstate Commercial Body Co. of this city, successors to the Sowerbutt Vehicle Co., has brought out an armored police car on the Reo chassis.

Touring Grand Prix Is Won by Peugeot

Covers 652 Miles in 12 Hours, 12 Minutes, 39 1/5 Seconds, Staying at Wheel

PARIS, July 30 (*by mail*) — Driving a sleeve valve Peugeot with a Weymann sedan body, André Boillot made the fastest time in the French Touring Grand Prix, which was the first race to be held on the new 7.7 mile road circuit at Montlhéry, near Paris. The cars in this class had to cover a distance of 652 miles with a gasoline allowance at the rate of 10.7 miles to the American gallon, all the fuel being aboard at the start, and had to have ballast equivalent to six passengers.

As it started in the race, the car weighed 6173 pounds. Boillot drove the entire distance without leaving the steering wheel, his time being 12 hours, 12 min., 39 1-5 sec., or an average of 53.4 miles an hour. An Austrian Steyr, also with a Weymann fabric leather sedan body, finished second, and Louis Rigal on a sleeve valve Peugeot with the same type of body, was third.

The Austrian Steyrs, which appeared to be faster than the Peugeots, were held back throughout the race with deflated tires. Michelin clincher bead balloons were used with the bead held down by an internal extensible duralumin band.

The Five-Passenger Class

There was no apparent explanation for the tires deflating, but the incidents cost the cars the race, for after the two spare wheels had been used, casings had to be changed by the driver.

In the five-passenger car class, three Cottin-Desgouttes were the only competitors. All three finished, the average speed of the winner being 53.1 miles an hour, on a gasoline allowance at the rate of 13.1 miles to the gallon. One of the Cottin Desgouttes lost its lubricating oil and the last 30 miles were covered with water as the only lubricant. These cars had dry sump lubrication.

In the 2-seater class, in which the distance of 590 miles had to be covered with a gasoline allowance of 19.6 miles per American gallon, a new type of straight-eight Bugatti with roller bearings, captured the first four places and averaged 52.6 miles an hour. The drivers were Constantini, Pierre de Vizcaya, Foresti and Jules Goux. The only other car to finish in this class was one of the racing 91½ inch Darracqs with touring equipment driven by Ledu, which, however, ran out of gasoline a mile from the finish. The driver pushed it over the line.

The Darracqs, which had never previously been beaten, failed to live up to their reputation. One car went out with a broken steering gear, after having led, and Jean Chassagne exhausted his gasoline allowance before the end.

BOARD SPEEDWAY IS ASSURED FOR SALEM

BOSTON, Aug. 6—New England is going to have a board track that will rival the one at Culver City, and it is to be ready in September so that a race will be assured on Saturday, October 17. It is to be built at Salem, N. H., just over the Massachusetts line where a race was held on July 4 which was won by Ralph De Palma.

Nearly 50,000 people went to that race, and the promoters, among them Jack Le Cain, the former racing star, saw the possibilities of speedway events and gave orders for the board track.

Le Cain has been assured that all the star drivers will compete and that the race will count in the points for the American championship. Mr. Price, who built the track at Culver City and other places, is doing the work.

Averages 62.9 Miles Per Hour for 248 Miles

PARIS, July 30 (*By mail*)—Using the Montlhéry track and private road circuit for a motor cycle race organized by the Automobile Club of France, the highest speed was attained by Simpson in the 500 cc. class, on an A. J. S. at an average of 62.9 miles an hour for a distance of 248 miles. Craig on a Norton, Walley on a Douglas, Karner on a Sunbeam, and Gremaud on a Peugeot finished in this order.

In the 350 cc. class the winner was Stevens on an A. J. S. at an average of 57.1 miles an hour, followed by Hollowell on A. J. S., Austice on Douglas, Longman on A. J. S., Marc on Alcyon and Hatton on Douglas. The winner in this class protested that he did not win the race, but the officials refused to admit that they could have made a mistake, and declined to accept any appeal in favor of Hollowell. Several of the riders maintained that they covered more than the regulation number of laps, but all their protests were ruled out of order.

The winner in the 250 cc. class was Rolland on a French Terrot at an average of 50.8 miles an hour, followed by Pierre on a D. F. R., Crabtree on New Imperial and Harding on Bradshaw. Sourdot on Monet Goyon won in the 175 cc. class, average speed being 47¼ miles an hour.

LAUNCH NEW COMPANY

WEST BEND, WIS., Aug. 6—The Pick Manufacturing Co. has been organized here to manufacture and deal in motors, steam engines, gas engines, automobiles, airships, motorcycles and bicycles. George Paull, G. L. Grow and Sam Pick are the incorporators and the capital stock consists of 1,000 shares no par value.

Report Sentiment for Ruling Insurance Co.

Talk Is Heard of One Organization to Have Control Over All Automobile Business

NEW YORK, Aug. 5—In view of the Chrysler - Palmetto controversy, the launching of the General Exchange Insurance Co., the Automobile Club activities on the Pacific Coast and other developments in the field of automobile insurance, it is reported that some company executives, both fire and casualty, believe that serious consideration should be given to the advisability of having one company organization with jurisdiction over all branches of automobile insurance.

For years it has been thought by some that it was fortunate that the laws of various States were amended so as to permit both fire and marine companies and casualty companies to write collision and property damage insurance unless the barriers between fire and casualty insurance were to be thrown down and companies of sufficient resources were to be permitted to write both classes.

With the laws as they are, however, confusion results from the fact that two organizations have jurisdiction over these two classes. A present example is the difference in commissions paid by the two classes of companies to local agents for collision and property damage business.

Other Advantages Seen

Another class of cases which one organization could handle advantageously consists of those where one of the major branches of automobile insurance is attacked through a minor branch. Thus a reciprocal, whose main business is automobile liability, can offer reduced rates for collision or property damage in connection with liability, and the liability companies cannot retaliate because the fire and marine companies have no occasion to reduce rates on these minor lines since their main line is not attacked. The principle is the same where the fire and theft business is attacked indirectly through the minor lines.

In the field of sprinkler leakage insurance, which is much less important than automobile insurance, the fire and casualty companies long ago saw the advantage of one organization.

GETS MEXICAN ROAD WORK

MEXICO CITY, Aug. 4—Contracts are reported to have been signed between the Mexican Government and Byrne Brothers Construction Co. of Chicago whereby Byrne Brothers will begin construction work on three highways in Mexico. One road will be between Mexico City and Laredo, a distance of 1300 kilometers, or about 700 miles.

Optimism Features National Reports

Outlook Is Favorable and Existing Conditions Satisfactory Throughout U. S.

(*Continued from page* 228)

pected to exceed those of the same month last year. Used car stocks are lower than usual. The financial condition is good. Accessory trade picked up during last half of July and prospects are bright.

Minneapolis reports good business from all angles. Sales dropped off slightly because many buyers waited to take advantage of the half-year reduction in the Minnesota motor tax.

West and Southwest

Rural demand for automobiles in Kansas City territory is as strong as it was in June, although city sales are tightening. More cash sales were made in June than in any month in the last four years. Used cars have been moving unusually well.

A lull in new car sales is noticeable in St. Louis, with buyers waiting for new models. Dealers have been successful in closing out their stocks of used cars. Factory production is normal and accessory sales satisfactory.

In Denver new records were established for sales of medium priced cars in July. The used car business is better than it has ever been. The truck demand is heavy.

July business in Salt Lake City was normal. June showed a slight falling off from the same month in 1924. The used car market is over-stocked, but the industrial situation is excellent and dealers are optimistic concerning late summer and fall business.

In Dallas the trend of business is upward with assurances of a fair cotton crop. New car sales were slightly in excess of those for June in cities and a shade lower in rural districts. Used cars moved at about the same rate as in June. The outlook is good.

Pacific Coast

July business in San Francisco showed considerable gain over June. June advance was 20 per cent over May and July exceeded June by 30 per cent. Reduction in prices on several models, lower first payments and longer terms on the balance, a drop in interest rates charged by some larger banks and the annual influx of cash from fruit and vegetable crops, were the principal causes of the advance.

In Sacramento there was a slight drop in sales compared to those of June.

Los Angeles reports an appreciable gain over July of 1924, but a small loss by comparison with June this year. The used car market is exceptionally active. Registration figures for the first six months of 1925 show that California purchased 94,242 passenger cars and 8,665 commercial cars, an increase of 2 per cent in cars and 5 per cent in trucks over the first half of 1924.

Automobile sales in Oregon, according to Portland reports, gained 12.6 per cent in June over the same month last year, but the six months total falls below the 1924 period.

In Seattle July sales showed a small loss from those of July a year ago. No July in recent years has found dealers with so few cars on their floors.

South

In New Orleans territory July business fell slightly below that of June. New cars sold well, but bigger business is expected in August. There is a slowing up in used car sales. Credit conditions are reported sound.

From Birmingham comes the report that new cars have been moving slowly, although stocks are low due to heavy business in June. Accessory business is slow, with tires and battery sales strong. The outlook is considered very good.

New car sales in Atlanta were better than in July last year. The used car business also is considered excellent and the truck business better than at this time last year. Accessories are in good demand and fall and winter prospects are encouraging. The cotton crop is expected to be a bumper and the whole South is expected to respond with heavy buying in the automotive field.

SLEEVE VALVE EIGHT ENGINE APPEARS HERE

INDIANAPOLIS, Aug. 5—The first single-sleeve valve, eight-cylinder engine to be used in America has made its appearance on the streets of Indianapolis under the guidance of Louis Chevrolet, the veteran race driver and automobile engineer. Having heard of the invention in Scotland, he obtained blueprints and specifications and in his own factory built the engine.

The motor is known as the Burt-McCallum, or Argyll, engine. It is a single sleeve valve type and was described in detail in Automotive Industries some time ago.

ELIMINATE GAS TAX

ROME, Aug. 5—A royal decree empowers the Minister of Finance to authorize exemption from import and sales taxes for gasoline intended for agricultural motors and machinery.

Bus Owners Oppose Massachusetts Law

Governor Refuses to Call Special Session to Repeal Control Statute on Books

BOSTON, Aug. 6—Despite their plea that $15,000,000 worth of motor coaches now operated by private owners would be junked unless the present motor bus control law is repealed, owners here were unsuccessful in their attempt to force a special session of the legislature.

Governor Fuller declined to admit that an emergency exists to warrant a special session. The proposal for a special session was presented by F. A. Deister, president of the American Coach Co., Clarence A. Barnes, counsel, and Roland H. Choate, a director.

The law became effective when its opponents failed to present a referendum petition bearing the required number of signatures. According to the motor bus company officials a referendum with 12,000 signatures disappeared at the last minute.

Four Warrants Issued

Four warrants have been granted by Judge Parmenter, of the Municipal Court, for the arrest of a man who is said to have gathered the signatures. He is charged with the suppression of a referendum petition; the larceny of a paper from Day Baker, business manager and treasurer of the Motor Coach and Bus Association; larceny of a paper from President Leslie G. Rawding, of that association and larceny of $740 from the complainant attorney, A. Van-Allen Thomason.

The new law provides that all operators must apply for a certificate of public convenience and necessity and file their schedules with the Public Utilities Commission. The charge is made that this will give the railroads a monopoly on highway transportation. Meanwhile, the situation is tense with applications being filed indiscriminately before the Public Utilities Commission and the Department of Public Works.

German-Russian Air Line Proves Popular

BERLIN, July 28 (*by mail*)—In the German-Russian aeroplane service the Deruluft, during June, made 54 flights in accordance with the schedule, between Konigsberg and Moscow, covering 64,800 kilos. Seventy-four passengers were carried, 568 kilos of mail matter and 2786 kilos of other aeroplane freight.

The aeroplane mail service is in greater demand this year. By making connections with the lines of the German Aero Lloyd and consequently with the other participating foreign countries, the Moscow-Berlin-Amsterdam-London and Paris service has been improved.

Palmetto Enjoins Commissioner Beha

Similar Action in Wisconsin in Behalf of the Chrysler Insurance Plan

NEW YORK, Aug. 5—Cabell, Ignatius & Lown, attorneys for the Palmetto Fire Insurance Co., have secured from Judge John C. Knox, in Federal Court, a temporary restraining order directed against James A. Beha, State Superintendent of Insurance, enjoining him from revoking the license of that company in this State, or otherwise interfering with its business.

This order is returnable Aug. 13, when the court will determine whether an interlocutory injunction shall be issued pending final determination of action for a permanent injunction.

Superintendent Beha had cited the company to show cause today why its license in this State should not be revoked because of its issuing fire and theft insurance on Chrysler cars under the Chrysler-Palmetto plan. Receiving notice of the temporary injunction, Mr. Beha postponed this hearing until Aug. 10.

Wisconsin Injunctions Issued

Judge C. Z. Luze of the U. S. District Court at Superior, Wis., in two equity suits, one by the Chrysler Sales Corp. and the other by the Clark Motor Co., Chrysler distributor in Milwaukee, has issued two temporary orders restraining W. Stanley Smith, Wisconsin Commissioner of Insurance, from arresting or bringing any action against Chrysler dealers or distributors or issuing any statements that the Chrysler insurance plan is illegal in Wisconsin. These orders are returnable Aug. 22.

Chrysler Issues Statement

Walter P. Chrysler, president of the Chrysler Corp., issued this statement:

To control the deferred payment price of its cars, the Chrysler Corp. negotiated for uniform finance charges throughout the United States. Before uniform finance charges could be obtained it was necessary to insure cars against loss from fire and theft. Before the Chrysler finance and insurance plan was put into operation July 1 the plan was reviewed by the ablest legal talent available from coast to coast and every opinion was that the plan was legal.

The insurance feature of the plan is incidental to the finance plan, but it is the feature which has incurred the opposition of a few state commissioners of insurance. The plan has been in operation more than a month and there has been but a single instance of attempted interference with our business. The Chrysler Corp is pledged to the finance plan and insurance plan it has inaugurated.

In citing the Palmetto concern to appear before him Mr. Beha said:

(*Continued on page* 233)

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

Despite the continuance of the quietness which is generally noticeable at this season, favorable influences are dominant. Current reports confirm the earlier indications that trade and industry in June were distinctly more active than a year ago in nearly all sections. Last week's developments included further advances in general commodity prices, firmness in stock quotations, and good crop weather—notably, the breaking of the drought in portions of Texas and Oklahoma, with material betterment in the prospects of the cotton crop.

Car loadings passed the "million mark" for the first time this year in the week ended July 18, when the total was 1,010,970, as against 982,809 in the preceding week and 930,713 in the period last year.

Production of crude petroleum in the week ended July 25 averaged 2,111,750 barrels a day, comparing with a daily average of 2,115,150 barrels in the preceding week and 1,987,700 a year ago. The value of exports of crude oils and petroleum products in the year ended June 30 was $439,524,524, or 10¼ per cent greater than in the preceding year.

A slightly higher level of operations in the iron and steel industry was reported last week. Buying was somewhat more active, and prices were steady. Output for the week was estimated at 65 per cent of plant capacity.

Business failures reported by R. G. Dun & Co. numbered 359 last week, comparing with 426 in the preceding week, and 352 in the corresponding period last year.

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended July 29 were 9.1 per cent smaller than the total for the preceding week, but 9.3 per cent above that of a year earlier.

Fisher's index of wholesale commodity prices stood at 160.8 last week, the highest point reached since March. The net advance from the year's low point in the first week of May is 6.7 points, or 4.3 per cent.

Earning assets of the Federal Reserve banks increased $6,600,000 during the week ended July 29, with a gain of $25,800,000 in discounts, largely offset by declines of $14,000,000 in open market purchases and $5,100,000 in holdings of Government securities.

Milton Will Pilot Duesenberg in Italy

Death of Ascari Halts Championship Contest with De Paolo, Who Remains in U. S.

NEW YORK, Aug. 6—Although the death of Antoine Ascari, greatest of European race drivers, precludes the possibility of a world's championship contest with Pete DePaolo, Tommy Milton will pilot a Duesenberg in the Italian Grand Prix at Monza on Sept. 6. DePaolo will remain in the United States.

Milton is scheduled to sail tomorrow for Cherbourg aboard the George Washington. Peter Kreis who also will compete in the classic is to sail aboard the Colombo directly to Genoa.

Ascari's fatal accident on July 26 followed his direct challenge to DePaolo after the Grand Prix at Spa, Belgium, on June 28. All arrangements had been completed for what promised to be the most thrilling racing event in the world's history.

Deep interest centers in the entry of the two straight-eight Duesenbergs. Tommy Milton ranks as the second race pilot in this country and holds the short distance record at an average speed of 155.3 miles an hour for the flying kilometre.

To Carry Dummy Bodies

The American Duesenbergs either are to be fitted with dummy bodies in order to increase the overall width to 31 in., or must carry two metal plates 170 mm. square (6.6 in.) on the left and right of the body. This handicap is imposed owing to the fact that all American 2-litre racing cars are constructed with narrow single-seat bodies and the other contestants will be two-seaters. Italian engineers calculate that with either of these alterations the American cars will offer the same head resistance to the wind as the European models.

The Italian Grand Prix is the single compulsory event for the World's Championship, a crown but recently created. The Duesenberg and Alfa-Romeo are now on an equal basis, the latter having won the European Grand Prix and the former holding first place at Indianapolis. If one of the "A-R's" should win at Montlhery they would virtually have the championship for the cars from this side are running in only two of a possible three events.

Others competing at Monza will be the Sunbeam, Delage, Bugatti and two Guyot Specials. The Guyots were intended for Indianapolis, but could not be assembled in time. They have made 118 miles an hour. They carry six-cylinder engines with the Burt-McCallum single-sleeve valve. They were designed to use the Cozette supercharger, but so far this device has not been installed.

Ford Bid for 200 Ships Is Accepted

He Is Expected to Use Some of the Machinery in His Factories

WASHINGTON, Aug. 6—Henry Ford's $1,706,000 cash bid for 200 steel vessels has been accepted by the Shipping Board. The next highest bid, $1,370,000, by the Boston Iron and Metal Co. of Baltimore, included the right to resell engines and boilers, which is not permitted under the terms of the Ford offer.

According to report, Mr. Ford plans to convert some of the ships to Diesel-driven craft to carry his products, and to use in his manufacturing plants engines and other vessels. The rest of the ships he is expected to junk. The board voted four to one to accept the bid.

Edward Rector, Patent Attorney, Is Stricken

CHICAGO, Aug. 6.—Edward Rector, senior partner of the firm of Rector, Hibben, Davis & Macauley of Chicago, succumbed suddenly to a heart attack at his home here last Saturday. Mr. Rector, who has long been recognized as one of the leaders of the patent bar in this country, has been chief western patent counsel for the National Automobile Chamber of Commerce for the past ten years, and his loss will be deeply felt by that organization. In addition to his work for the Chamber, Mr. Rector represented many other large units of the automotive industry. His philanthropies were numerous, and the fruits of his success were shared with many. The man, as well as the brilliant lawyer, will be deeply mourned.

Palmetto Insurance Co. Retrains Beha

(*Continued from page* 232)

The Palmetto Fire Insurance Co. is charged with entering into an agreement to insure automobiles located or resident in this state and also to issue insurance to residents in this state upon automobiles used in this state and elsewhere.

(a) With the intent of evading the laws of New York State enacted for the purpose of supervising, regulating and taxing the business of insurance as effecting the risks located or resident in this state;

(b) With issuing insurances upon risks located and resident in this state with intent of escaping from the provisions, restrictions and safeguards imposed by the New York Insurance Law upon companies authorized to do business in this state, and

(c) With intent to defraud the state of New York of the taxes which are rightfully due it under the laws of the State of New York and from the effect of which the Palmetto Fire Insurance Co. is seeking to escape.

MOTOR STOCKS

In Confused and Irregular Movement Good Stocks Are Closely Held

NEW YORK, Aug. 6—Out of the confused and irregular movement of stock prices during the week one fact stands clearly revealed: good stocks are closely held. This is aptly illustrated by the fairly spectacular advances in such issues as General Electric, American Can, Dupont and General Motors. A somewhat firmer tendency in the money market resulted only in hesitancy in the lower priced speculative issues in which there is a large public interest.

In the automotive group General Motors easily has assumed the position of leadership. This position is the more remarkable when the great volume of stock outstanding is taken into consideration. The remarkable earnings statement published by the corporation a week ago, together with semi-official intimations that negotiations looking to the acquisition of the Fisher Body Corp. are in progress, has fired the public speculative imagination. During the week General Motors has sold at the highest price ever recorded under the present capitalization and Fisher Body likewise has established a new high level. Reports are to the effect that General Motors will declare an extra dividend of one dollar per share in each of the next two quarters and that Fisher Body will declare an extra dividend of seventy-five cents per share in each of the next two quarters. It is reported, too, that the latter company may declare a large extra in cash.

The rubber stocks, following their recent sensational advances have reacted somewhat as have crude rubber prices. It is a question whether the rubber producers have not overplayed their hand in the application of the Stevenson plan, creating a speculative position at least which is extremely hazardous. The wild trading in rubber stocks in London, equalling the wildest days of Barney Barnato's time, has led bankers to take an extremely cautious attitude toward this group. To Americans unfamiliar with the periodic speculative booms which occur in London the trading is unbelievable. On one morning recently one firm had orders to buy "at the market" two hundred and sixty thousand shares of various rubber stocks and this total did not include any orders for less than five thousand share lots.

Of the accessory stocks, Spicer Manufacturing was a feature, the element of mystery so beloved of Wall Street entering into the movement. The company is reported to be earning from six to nine dollars per share and in addition, there are reports of a merger and of buying for control.—H. H. S.

Harry Unwin, Pioneer in Automobile World, Is Dead

PITTSBURGH, Aug. 6—Harry Unwin, one of the well known figures in the automobile industry, more recently in charge of fleet sales for the Chrysler Corp., died in this city from apoplexy, while visiting here on a business trip.

Mr. Unwin was born in England on June 4, 1868. He entered the automobile world in 1902 as secretary of the N. A. A. M. Later he was in charge of the export business of the Olds Motor Works in Detroit. He became manager of the New York branch of the Pierce-Arrow Motor Car Co. Later he held the same post for the White Co. and for a time was associated with the Peerless Motor Car Co.

Hudson-Essex Reaches 30,000 July Production

DETROIT, Aug. 6—Hudson-Essex is operating on a schedule of 865 Essex and 425 Hudsons daily. Production was close to 30,000 for July. Factory enlargements now being made will enable the company to produce 1500 or 2000 later. July shipment reached 27,000 with indications pointing to 30,000 for August.

The company probably will report the sale of 87,000 for the quarter ending Aug. 31. The increased output is due to the construction of the new Hudson-Essex body plant to cost between $3,000,000 and $5,000,000. The company will continue to take the present output of the Briggs Manufacturing Co., which is now building its bodies.

Packard Announces New 6-Cylinder Club Sedan

DETROIT, Aug. 6—The Packard Motor Car Co. has announced the addition of Club Sedan models to both its 6 and 8-cylinder lines. The 6-cylinder model which lists at $2,725 is mounted on the 133 in. wheelbase while the 8-cylinder model which lists at $4,890 is supplied on the 143 in. wheelbase.

Both models are finished in blue and black lacquer, and the upholstery is identical with that used in the other Packard closed models. Standard equipment on both models includes 5 disk wheels, front and rear bumper, shock absorbers, automatic windshield wiper, sun visor, cowl ventilator, rear view mirror, heat indicator, stop light, dash gasoline gage, cigar lighter, clock, and ignition door and spare tire locks.

Products Show is Planned

DETROIT, Aug. 5.—Directors of the National Standard Parts Association, meeting here recently, decided to hold a products show in connection with the second annual association convention in Chicago Nov. 5-7. Plans for the show are in charge of a committee consisting of A. T. Haugh, chairman, King Quality Products, Inc., Buffalo, N. Y.

Outlines Motor Plans of New Haven Road

A. P. Russell Explains Bus Operation Policy Designed to Regain Lost Passenger Traffic

BOSTON, Aug. 6—Arthur P. Russell, vice-president of the New York, New Haven & Hartford Railroad and president of the New England Transportation Company, a recently organized subsidiary, has described the policy of the New Haven road, as it affects the coordination of rail and motor coach highway service in southern New England, before the Massachusetts Department of Public Utilities.

After pointing out that a considerable percentage of passenger travel has left the rails for the highway and that the New Haven, with increased operating expenses, faces an increasing loss in passenger business, Mr. Russell said:

"Where, in its opinion, either a substituted or a supplementary service to that of the rails is required, it is the purpose of the company, subject to the approval of the Department of Public Utilities and after obtaining licenses from the municipal authorities where required by law, to operate a highway motor coach service and to carry the public which previously used the rails."

Plan for Operation

These bus lines, Mr. Russell said, will be operated as follows:

"As an extension of and in connection with rail service, making connections with important trains that may be desirable in the public interest.

"Parallel with and as feeders to rail service, thus enabling rail service to be scheduled more rapidly.

"For the filling of rail schedule intermissions where highway operations is justified but where passenger traffic is too light or freight switching is too heavy to justify gas rail cars.

"For a highway service connecting with the rail service, so far as practicable, between certain populous centers where the rails handle passenger travel, but between which the construction of new or the improvement of old highways has now created a situation in which the operation of the motor coach offers the only means of regaining former revenues.

"It is only fair," Mr. Russell added, "that the New Haven, which is taxed annually $5,000,000, a substantial part of which is used to build and maintain highways, should have the right to use these highways."

ALEMITE CO. EXPANDS

MILWAUKEE, Aug. 6—The Alemite Lubricator Co. of Wisconsin, has moved to new and larger quarters, in the former home of the Harry E. Weber, Inc., wholesale automotive supply dealers.

FINANCIAL NOTES

The Coast Tire and Rubber Co., Oakland, Cal., recently reorganized, has issued the following statement on its condition:

"A brief analysis of the financial condition of the Coast Tire and Rubber Co. on June 30, 1925, as compared with the condition of the company prior to the reorganization of June 30, 1924, shows that, in 1924, the old company had an indebtedness of over $228,000, and estimated assets of $530,000, leaving a probable net worth of $302,000, while the plant had been shut down for several months. During the current fiscal year, the finances of the company have been completely reorganized under the active management of J. C. Hughes and L. S. Budo. This was effected through the stockholders of the old corporation, who are the owners of the reorganized company, which shows, on June 30, 1925, current quick assets of $213,241, and current liabilities of $22,300. Out of the net operating profits earned by the company, all dividends on its preferred stock have been paid to July 1, 1925."

Norwalk Tire and Rubber Co. announced that stockholders of record July 31 will have the right to subscribe to 50,000 shares of common stock at $16 a share at the rate of 445 one-thousandths of a share for each share now held. The offer expires Aug. 5. A special stockholders' meeting has been called for Aug. 4 in Norwalk, Conn., to approve the new stock issue, which will make the total capitalization 150,000 shares, par value $10. Proceeds of the sale will be used to retire the $750,000 ten year 7 per cent sinking fund gold notes, which now constitute the company's only funded debt.

The Timken Roller Bearing Co. has declared an extra dividend of 25 cents a share on the capital stock in addition to the regular quarterly payment of 75 cents, both payable Sept. 19 to stockholders of record Sept. 5. The company has been paying extra quarterly dividends of 25 cents a share since September, 1923. The net earnings for the first half year were $3,983,243, equal to $3.31 each on the 1,200,192 shares of no par value capital stock outstanding. This compares with net of $3,046,491, equal to $2.53 a share in 1924.

H. H. Franklin Manufacturing Co.'s balance sheet as of June 30, 1925, shows cash and sight drafts on hand of $2,223,267, against $1,633,202 on Dec. 31, 1924. Inventories show a reduction from $3,754,899 to $3,568,261. Current assets were $6,015,304 against $5,755,060 and current liabilities $496,935 against $1,280,835. Sales in six months of 1925 were $11,323,119.

Maxwell Motor Corp. 8 per cent non-cumulative preferred stock and the Class A and B common stock without par value have been stricken from the trading lists of the New York Stock Exchange. It was announced that effective Aug. 10, the Maxwell Motor Corp. certificates of deposit for the same securities will be stricken from the list.

Hudson Motor Car Co. estimates net profits for the current quarter will run $4.50 a share for the common stock outstanding. For the first nine months of the fiscal year net is expected to be $12 a share, or four times the present dividend.

Studebaker Corp. declared the regular quarterly dividends of $1 on the common and $1.75 on the preferred, both payable Sept. 1 to stock of record Aug. 10.

Financial Reports Point to Prosperity

Studebaker, Paige-Detroit and Others Issue Statements Showing Marked Advances

NEW YORK, Aug. 5—The figures made public last week by General Motors Corp. revealing "the most satisfactory statement, both with respect to earnings and general position, that General Motors Corp, has ever made," were reflected generally in reports from others in the industry.

For the first six months of 1925, after all charges, General Motors Corp. had surplus available for dividends amounting to $46,082,236. AUTOMOTIVE INDUSTRIES erred in a headline last week in stating that profits for the first half of 1925 were $28,271,000. This latter figure represents profits for the second quarter.

Statements issued by other organizations this week appear to reflect the same upward trend as that which made the General Motors Corp. figures significant. The following statements have been made public:

Studebaker Corp.

Report of Studebaker Corp. for quarter ended June 30, 1925, shows net profit of $6,516,268, after all charges and reserve for Federal taxes, equivalent, after preferred dividends, to $3.40 a share on no par common stock. This compares with $3,605,780, or $1.84 a share in preceding quarter and $4,030,010, or $2.07 a share, in second quarter of 1924. Net profit for first six months of 1925 totaled $10,122,048, equal to $5.24 a share on common, after allowing for preferred dividends, as compared with $7,572,269, or $3.88 a share in first half of previous year.

Total Assets Gain

Total assets as of June 30 last were $132,588,002, comparing with $123,010,927 on June 30, 1924, and profit and loss surplus $31,028,539, against $23,195,003. Current assets were $53,280,963, comparing with $46,397,486, and current liabilities were $13,059,462, against $11,555,924 on corresponding date of previous year.

Paige-Detroit Co.

Paige-Detroit Motor Car Co. net profit for the six months ended June 30, before taxes, amounted to $2,208,094.26, a gain of $351,094.26 over the same period for 1924. This includes profits of the branches and compares with profits of $1,857,000 for the same six month period last year. The company's total cash assets as of June 30 were $16,574,087.05 of which $5,142,978.73 is cash. A total of 24,002 Paige and Jewett cars were sold during the first six months, company officials said.

(*Continued on page* 236)

Automotive Steel Business Gaining

Mills Working Near Capacity Due to Recent Reductions on Many Makes

CANTON, OHIO, Aug. 6—Improvement is reported in manufacture of automotive steel, believed to have been stimulated by the recent general reduction in many makes of automobiles.

Operations this week at the plants of the United Alloy Steel Corp. reached twenty-two out of twenty-four mills, almost capacity. The mills are turning out fender and hood steel for some of the largest makers of automobiles in the country. At the South division of the United Alloy Steel Corp. body steel is being made exclusively, with the exception of two mills.

Improved schedules of production also are reported at the Central Steel Co., Massillon, and at the sheet mills in the Dover-New Philadelphia.

At Alliance, where there are several automobile parts manufacturing concerns, production was increased the first of the month. Mullins Body Corp. at Salem is working at near capacity, officials said.

Other plants in Canton, including the Hercules Motor Corp. and the bearing plants of the Timken Roller Bearing Co. and the Gilliam Manufacturing Co., also are doing better in the way of operations.

Big business is reported by the Bean Spring Co., Massillon, makers of auto springs and bumpers.

South America Favors Automobiles from U. S.

WASHINGTON, Aug. 6—Bolivian imports of automobiles continue unusually heavy, say dispatches to the Automotive Division of the Department of Commerce. Consular reports confide that an American exporting firm, operating its own line of steamships to the west coast ports of South America, is carrying between ten and twenty automobiles consigned to Bolivian firms on each bimonthly steamer touching at Mollendo, Peru, and Arica and Antofagasta, Chile, the Bolivian ports of entry.

An observer who has made a close study and traveled extensively reports that there are no automobiles to be seen in Bolivia other than those of American manufacture.

REORGANIZE DETROIT CAB CO.

DETROIT, Aug. 5—The Brown & White Cab Co. of Detroit is undergoing reorganization and changing its name to Detroit Cab Co., according to announcement here. Entire new rolling stock will be substituted for the present old cabs, which will be sold.

INDEBTED CAR BUYERS MAY INSURE CREDIT

MILWAUKEE, Aug. 6 — The Wisconsin Acceptance Corp. of Milwaukee is advertising insurance protection against payment lapse for those who borrow money on their automobiles through this agency. The company claims that its insurance underwriter will take care of the borrowers payments in case of illness or injury and that in case of the death of the borrower, his account with the Wisconsin Acceptance Corp. will be paid in full by the latter company. The company is advertising its service as "an easy way to borrow money on your car while you drive it. Come in and get a check for any reasonable amount and pay us back in easy monthly installments."

Northway Motors Enters Receivership

BOSTON, Aug. 4—An application for receivership was entered against the Northway Motors Corp. of Natick, Mass., in the U. S. District Court in Boston on July 27 and after a hearing Frank V. Noyes, president of the Arlington National Bank was appointed receiver. The petition was made on behalf of various creditors, including the Amalgamated Motors Corp. of Plainfield, N. J., which has a claim for money loaned to the amount of $117,000.

Last year the operation of the Northway plant at Natick was taken over by the Amalgamated Motors Corp., but it is understood the arrangement has not worked out as contemplated, chiefly on account of complications in the capital structure of the Northway Co. and a reorganization has been in prospect for some months. Following the appointment of the receiver it was stated by an officer of the company that this action had been taken in order to conserve the assets of the corporation and was largely the result of a condition which had been inherited by the management. Since the present interests took over the operation of the property last year substantial progress had been made, but it had been impossible to establish the business on a permanent basis on account of a provision in the articles of incorporation calling for the redemption of the preferred stock.

TO JAIL DRUNKEN DRIVERS

BOSTON, Aug. 5—Any Massachusetts automobile driver convicted a second time in six years for driving while intoxicated will be jailed, under the newly revised automobile laws announced by F. E. Cook, secretary of state. Other changes were made penalizing the offender who drives after his license has been revoked or suspended.

Automotive Call for Steel Continues

Bulk of Demand Is Covered at 2 Cents, Pittsburgh, Basis, but Some Falls Lower

NEW YORK, Aug. 6—While prices for some steel products display considerable steadiness, there is so much irregularity in the prices of others that it will hardly do to characterize the market as firm. Producers say they have no trouble in booking all steel bar orders that overhang the market on a 2c., Pittsburgh, basis, and it is quite true that the bulk of the demand is being covered at that level. Yet some business was placed recently at $1 to $2 a ton below that level, the seller admitting that the tonnage involved was sufficiently attractive to warrant this slight concession.

Whether buyers could obtain a better than the 2c. price this week is problematical, but there is no question that producers are eager for more of a backlog on their bar order books. Black sheets are supposed to be firm at 3.15c. for the No. 28 gage, Pittsburgh base. Here, too, occasional concessions of $1 per ton are reported. Hot-rolled strip steel is relatively one of the firm items at 2.20c., Pittsburgh base for the wide, and 2.40c. for the narrower stock, and cold-rolled is held at 3.75c., with the demand for the latter not quite so active as for the hot-rolled material.

Big Automotive Demand

Cold-finished steel bars move in small tonnages at 2.60c., Pittsburgh, but this price could in all probability be shaded on a worth-while tonnage. All of these products are being bought by automotive consumers in more or less routine fashion, and producers are astounded at the pace of the automotive demand which they had expected to slacken considerably before this.

Alloy steel producers, however, report that they are rapidly catching up with the automotive orders which they have in hand, and that new commitments are slow in coming in. All in all, the steel market is once more at one of those turns which may lead to greater resistance on the part of sellers to demands for concessions, but if the volume of orders fails to justify this attitude, prices will again yield. So far, the situation is by no means the bed of roses for producers which some of the market reporters paint it to be.

Pig Iron—Some of the automotive foundries have begun to cover their fourth quarter requirements. Prices are unaltered, but melters seem to have greater confidence in their continuing in effect over the remainder of the year.

Aluminum—Seasonally orderly conditions prevail in the aluminum market. The normal quantity of foreign metal allotted to this country is coming in. A

(*Continued on page* 236)

Financial Reports Point to Prosperity

Studebaker, Paige-Detroit and Others Issue Statements Showing Marked Advances

(*Continued from page* 234)

Mack Trucks First Half

Mack Trucks, Inc., for the quarter ended June 30 reports net profits $2,898,978 after reduction of all charges. After allowing for dividends on preferred this is equal to $7.69 a share earned on 339,730 shares of no par common.

For the first half the company reports net profits after deductions of $4,653,847, equal, after preferred dividends, to $12.02 a share earned on common. This compares with net profits $3,450,616, equal to $10.18 a share on common, in the first half of 1924. The company reports business in the first six months of 1925 as 40 per cent larger than in the same period in 1924.

The balance sheet as of June 30 shows profit and loss surplus $29,040,239, capital stock $18,149,214, current assets $38,737,330 and current liabilities $5,060,870. Current assets included $4,468,531 cash, $13,913,050 bills receivable and inventory valued at $20,355,748.

Nash Trebles July Business

Nash Motors Co. in July did three times the business of July a year ago and twice the business of any July in its history. Company officials say that increased production will make August, in production and sales, their greatest month. E. H. McCarthy, general sales manager, says orders on hand are 30 per cent greater than August production possibilities.

Mullins Body Corp.

The Mullins Body Corp. reports gross profits of $169,616 for the quarter ended June 30, 1925, against $202,732 in the same period last year. After all deductions there was net income of $87,348, which after preferred dividends was equal to 68 cents a share on the 100,000 shares of common stock outstanding. This compares with $1.17 a share in the June quarter last year.

For the half year ended June 30, 1925, the company reported net income of $191,444, which after preferred dividends was equal to $1.52 a share on the common stock, against net income of $206,694, equal to $1.68 a share in the first half of 1924.

Jordan Net $228,575

Jordan Motor Car Co. quarter ended June 30 shows net profit was $228,575 after charges but before Federal taxes, against $205,138 in previous quarter. Net profit for half year totaled $433,713, against $480,671 in like period last year.

ERSKINE SEES MORE PROSPERITY THIS YEAR

NEW YORK, Aug. 5—"The business outlook for the second half of 1925 is most promising," President A. R. Erskine of the Studebaker Corp., said in commenting upon the results of the second quarter as well as the first half of the year. "More cars were produced and sold in July than in any previous July of the corporation's history, while sales and net profits for the third quarter promise to be double those of last year."

Lee Rubber & Tire

The Lee Rubber and Tire Corp. reports net profits of $152,685 for the second quarter, which compares with a net loss of $39,348 in the same period of last year. Net sales totaled $3,584,187. The jump in earnings does not reflect the recent increase in tire prices.

Truck tire sales were 260 per cent greater than in the corresponding quarter of 1924. The company's solid tire department has sufficient orders on hand to keep it operating at capacity to Oct. 1. The Lee plant at Conshohocken, where the pneumatic tires are manufactured is to increase its production schedule immediately.

American Bosch

The American Bosch Magneto Co. reports for the quarter ended June 30, 1925, net profits of $165,263, after depreciation, interest, etc., equivalent to $1.19 a share on the 138,266 no par capital shares outstanding, compared with $29,451, or 30c. a share, on the 96,000 shares in the corresponding period a year ago.

For the six months ended June 30, net profits amounted to $241,895, or $1.75 a share on the 138,266 shares, compared with $176,980, or $1.84 a share on the 96,000 shares in the same period of 1924.

Gabriel Snubber

The Gabriel Snubber Manufacturing Co., which recently was reorganized to permit Clevelanders and others to own capital stock, earned over three times the dividend requirements in the first six months of 1925. Net earnings for the period were $770,200 or the equivalent of $7.70 a year on common stock, on which dividends at the rate of $2.50 per year are being paid.

Average net earnings of the company for the three year period from 1922 to 1924 were $5.81 a share, while earnings for 1924 were equivalent to $5.43 a share. The year 1923 was the best year in the history of the automobile industry in this city, but if the present record is maintained, Gabriel's business in 1925 will exceed that for 1923 by at least $300,000.

Standard Wheels Are Favored by Firestone

Believes Manufacturers Must Work Together for Conservation of Rubber Supply

AKRON, OHIO, Aug. 6—Reduction of the number of types and sizes of tires can only be accomplished through the cooperation of automobile manufacturers, says H. S. Firestone, president of the Firestone Tire & Rubber Co.

Far-sighted motor car manufacturers are beginning to realize, he states, that it is to the best interest of the automotive industry as a whole to provide their machines with wheels of standard design, which can be fitted with tires already being turned out in quantity production.

He points out, however, that it will be almost impossible for the tire manufacturers alone to successfully combat the evils of excessive tire sizes. The original equipment business of even one of the smaller motor car companies amounts to such a large volume that some rubber company is certain to supply to automobile manufacturer with tires of any desired type, even if new molds or other machinery has to be installed for this purpose. After the car with the odd wheel design is on the market, other tire manufacturers feel obligated to supply tires for the necessary replacements.

Automotive Call for Steel Continues Firm

(*Continued from page* 235)

French steamer arrived a few days ago landing 2000 bbl. of ingots from Switzerland consigned to a banking house with Swiss connections. Once in a great while a very small shipment of European sheets turns up. The other day a shipment of one lone bundle of sheets from England was noted. The market for remelted metal is steady.

Copper—There is no question about sentiment being bullish, but every spurt of the market appears to be followed by a long pause, if not a reaction. For all that, the trend is certainly upward.

Tin—London speculators who are seeking to drive the market higher are taking full advantage of the slightly better outlook with reference to the coal strike. Some automotive consumers have covered their wants for several months ahead at recent levels.

Lead—Producers are trying to whip their price into line with "outside" market quotations, the leading interest continuing its policy of cautious moderation in making price changes.

Zinc—Better conditions in galvanized sheets are reflected in the zinc market.

General Motors Cuts Financing Charges

Will Effect Reduction in Price to Buyer, but Amount Is Indefinite

NEW YORK, Aug 6—Reductions in the financing charge to installment purchasers of General Motors cars, including Chevrolet, Oldsmobile, Oakland, Buick and Cadillac, became effective Aug. 1 and were announced through the General Motors Acceptance Corp.

Alfred P. Sloan, Jr., president of General Motors Corp., says that since the important thing to the purchaser is the final delivered price and since the financing charge is part of that price in the majority of sales, the financing charge reduction amounts to a reduction in the delivered price of the entire General Motors line. This reduction, of course, is in addition to the price cuts announced in the General Motors line of cars.

Reduction Indefinite

The financing rate of General Motors Acceptance Corp., when added to the cash delivered price, now constitute the standard time sales price to the purchaser of General Motors cars.

While it was impossible to state the exact amount of the reduction, owing to the various insurance factors which enter into the plan, General Motors officials said that it would amount to considerable. A reserve fund has been established which will be used to take over certain burdens heretofore shouldered by the dealer, reducing the cost to him in each instance.

AIRPLANE "TAXI" TAKES PLACE OF STAGE COACH

MILWAUKEE, Aug. 6 — An aerial taxicab service with a plane ready to leave for any given point within a radius of several hundred miles on an hour's notice has been established at the county airport in Milwaukee, by L. K. Benson of Menominee Falls, Wis. The "cab" is a big Canuck with a carrying capacity of three hundred and seventy pounds in addition to the pilot, Dwight Morrow. The cost of the trip is figured on a mileage basis, with a $40 charge between Milwaukee and Chicago serving as an indication of the general cost of the service.

Rickenbacker Ships 6100 Cars in First Six Months

DETROIT, Aug. 6.—Rickenbacker Motor Car Co. during the first half of 1925 shipped 6100 automobiles as compared to 5412 for the same period in 1924. Shipments are at the rate of 70 per day which, with present prospects, will bring the year's total to between 12,000 and 15,000. The 1924 total was 7187. In July 1450 cars were produced.

NEW ARMY ENGINE

BALTIMORE MD., Aug. 6—Development by the Army of a new type of automobile engine, designed to meet the specialized need of military transport, has been announced by A. W. S. Herrington, Motor Transportation Division, U. S. A., Camp Holabird.

California Tax Law Hits Car for Hire

Operators of Automobiles Carrying Passengers and Freight Must Pay 4% of Gross

LOS ANGELES, Aug. 6.—Operators of motor vehicles in this State engaged in the transportation of passengers or property for compensation are very much concerned in the provisions of a new law which became effective July 24 that taxes them four per cent of their gross receipts. This law was passed at the 1925 session of the legislature and is quite similar to a law that was passed in 1923 and held unconstitutional by the California supreme court.

The new law contains a clause which repealed the previous act, under the provisions of which several hundred thousands of dollars were collected from operators. After the supreme court held the 1923 act to be unconstitutional, rehearing was granted, but inasmuch as the 1925 act repealed the former statute that measure is regarded as dead. The income from the previous act went into the State treasury and can be refunded only by an appropriation.

The enforcement of the new act rests with the State boards of equalization, and injunction proceedings in the nature of a friendly suit are now in contemplation. The State authorities are said to favor such action and are not inclined to go to expense for the administration of the law if it might be declared unconstitutional.

The passage of the law is said to have been accomplished by influences representing the rail carriers.

Publishers Unite Export Magazines

NEW YORK, Aug. 6—The McGraw-Hill Co., Inc., and the United Publishers Corp. have formed a new company to be known as the Business Publishers International Corp. to publish specialized papers to serve adequately the tremendous development which is taking place in overseas trade and industry.

The new company has taken over the foreign language and export papers now published by the two parent companies. These are Ingenieria Internacional, an engineering and industrial paper circulating in Spain and Latin America, heretofore published by the McGraw-Hill Co., and El Automovil Americano and The American Automobile (Overseas Edition), automotive business papers, the former circulating throughout the Spanish reading countries and the latter in Australia, New Zealand, South Africa, India, Great Britain, Norway, Denmark, Holland, Belgium, the Orient, and other territories. Both automotive papers were formerly published by the United Publishers Corp.

Officers of the new company will be Mason Britton, president; John Abbink, vice-president and general manager; J. L. Gilbert, vice-president and secretary, and C. A. Musselman, treasurer. Mr. Britton is vice-president of the McGraw-Hill Co. Mr. Abbink has been business manager of Ingenieria Internacional and Mr. Gilbert has been business manager of El Automovil Americano and The American Automobile (Overseas Edition). Mr. Musselman is president of the Chilton Class Journal Co., the automotive division of the United Publishers Corp.

In addition to the officers, directors of the new company will be Charles G. Phillips, president of the United Publishers Corp., Malcolm Muir, vice-president of the McGraw-Hill Co., Inc., Phillip S. Smith, editor of Ingenieria Internacional, and George E. Quisenberry, editor of El Automovil Americano and The American Automobile (Overseas Edition.)

Headquarters of the Business Publishers International Corp. are at 225-241 West Thirty-fourth Street, New York City. Plans have been completed by the new company for maintaining full time business and editorial representatives in important commercial centers abroad, their work being supplemented by correspondents in other localities. In addition to its own editorial staff, the new company will have the benefit of the editorial facilities of the business papers published by the McGraw-Hill Co. and the United Publishers Corp.

The demand for specialized business papers which developed and has been met in this country is growing in centers of industry and trade abroad, and the activities of the Business Publishers International Corp. will follow closely those of the two parent companies which are the largest in the world in their respective fields.

Men of the Industry and What They Are Doing

Thornton With Peerless

R. B. (Dick) Thornton, who has been associated with the automobile industry for a number of years, first as a member of the transportation division during the World War, then in the distribution of automobiles with J. W. Leavitt of San Francisco, as assistant sales manager of Durant Motors, vice-president and general manager of the W. C. Auble Motor Co., territory man for C. E. Gambill, Hupp distributor of Chicago, then manager of the Studebaker branch at Cleveland, has become manager of the Chicago branch of the Peerless Motor Car Co.

Blake in California

H. H. Blake, for many years wholesale representative for Herbert Brothers, Chandler and Cleveland distributor for Philadelphia, but more recently manager of the Harrisburg Duco Co., has sold his interests in the latter to enter the real estate business in California. J. Sidney Sible, until recently Harrisburg, Cleveland and Chandler distributor, has bought Mr. Blake's interest in the Duco concern and has assumed its management. Mr. Sible sold his Chandler-Cleveland business to T. A. Smith, formerly of Mt. Carmel.

Anderson With Kant-Skore

Robert J. Anderson, former metallurgical engineer, U. S. Bureau of Mines, and internationally known for his research work on aluminum and aluminum alloys, has become affiliated with the Kant-Skore Piston Co. of Cincinnati. He heads the metals division and in his work will draw extensively upon science and his past experience for the purpose of developing an even better alloy than now is being used in the manufacture of Kant-Skore pistons.

Comes from Africa

R. Stockelbach, manager of the Ford Motor Co., Ltd., of South Africa, a recent visitor to the Ford Motor Co. of Canada, Ltd., of Ford City, Ont., is optimistic regarding the future of the motor car in that territory. Local governments are now attempting to improve the roads and have secured the cooperation of the national government.

Gotshall With Monarch Co.

R. W. Gotshall has been appointed vice-president and general manager of Monarch Tractors, Inc., Watertown, Wis., and H. B. Baker was named vice-president and director of sales. Mr. Gotshall was formerly assistant manager of The Holt Mfg. Co., Peoria, Ill. For the past 12 years Mr. Baker has been sales manager of The Holt Mfg. Co.

E. E. Haight Resigns as Official of Motor Age

CHICAGO, Aug. 5—E. E. Haight has resigned as business manager of *Motor Age*, after a service of 17 years with the paper, in order to become president of a new publishing company which will publish three business papers in Chicago.

Mr. Haight began his work with *Motor Age* in April, 1908. In 1911 he became business manager, which position he continued to fill until July 31 this year. During much of this time he was also western manager of the Class Journal Co., now the Chilton Class Journal Co., publisher of *Motor Age*, *Automotive Industries*, *Motor World Wholesale*, and other automotive business papers. He was also a director of the Chilton Class Journal Co.

The new company of which Mr. Haight is president takes over the publication of three business magazines which, for a number of years, have been well established in their respective fields. They are *Concrete*, a leading business paper of the cement and concrete industry; *Building Materials*, devoted to the construction industry, and the Cement Mill edition of *Concrete*.

Banta With Truck Co.

A. J. Banta has been made assistant general manager of the General Motors Truck Co., Pontiac, Mich. He was formerly Locomobile branch manager in Chicago, was with Maxwell at the Chalmers factory, and then Chicago manager for Maxwell-Chalmers. He recently resigned as sales manager for Rickenbacker.

Frey Becomes Chief

L. Frey, formerly assistant research metallurgist of the Holt Tractor Co. of Peoria, Ill., has been appointed chief metallurgist and research engineer for the Gerlinger Electric Steel Casting Co. of West Allis, Wis., a suburb of Milwaukee. The Gerlinger company is widely known in the automotive industries.

Ruark Is Promoted

B. W. Ruark, for the last three years field secretary of the Automotive Equipment Association, has been made assistant to Commissioner Webster at the association headquarters here and in the future will devote most of his time to the work of administering the affairs of the association.

Visit Kissel Factory

Harry P. Branstetter of Chicago, State distributor for Kissel, headed a delegation of fifteen dealers of Illinois to the factory at Hartford, Wis., recently. Officials of the Kissel company met the dealers at the train in Milwaukee and the remainder of the distance was covered by automobile.

Greer in San Francisco

P. H. Greer, president of the Greer-Robbins Co., Hupmobile distributor in San Francisco, spent a week with E. W. Milburn, manager in that city, planning a sales campaign to take advantage of improved conditions in central and northern California.

Bartholomew Resigns

T. R. Bartholomew, Keokuk, Iowa, has resigned as director of the Iowa Automotive Merchants Association. H. E. Hade of the H. E. Hade Motor Co., Ft. Madison, Iowa, was appointed to the post held by Mr. Bartholomew.

Weber Touring Canada

Edward Weber, president of the Weber Motor Car Co., Studebaker distributor in the St. Louis district, departed July 29 with Mrs. Weber and their daughter, Janice, for a month's tour of Canada and Alaska.

Campbell in Cleveland

James L. Campbell, former sales manager of the Wills Sainte Claire Co. of Illinois, has taken charge of the Wills Sainte Claire interests in northern Ohio with headquarters at Cleveland.

Goodwyn Is Manager

C. C. Goodwyn is now sales manager for the Chicago Packard branch, succeeding R. E. Macduff, whose assistant he was. Mr. Macduff has become eastern district manager.

McWilliams in Memphis

J. L. McWilliams, former factory representative for Chevrolet in Iowa, has accepted a position with the Mercantile Acceptance Co., as manager of the Memphis, Tenn., branch.

Steele With Locomobile

Bruce K. Steele, associated with the Franklin factory for a number of years, has been appointed manager of the Chicago branch of the Locomobile Co.

Gillette Joins Federal

H. L. Gillette has joined the Chicago branch of the Federal Motor Truck Co. as sales manager. He has resigned as manager of the GMC truck branch in Milwaukee.

Marks Takes Charge

J. P. Marks is the newly established Chicago wholesale manager for Durant Motors. He was formerly head of the Durant Chicago branch, where he has been succeeded by J. S. Mitchell.

Fisher Body Corp. to Start Bus Building

Purchase of Buick Plant May Establish Detroit as Center of Bus Industry

DETROIT, Aug. 6—Quantity production of bus bodies in Detroit will be undertaken by the Fisher Body Corp. following its purchase of the Buick plant. The plant now has a ground area of 40 acres and more than 500,000 square feet of floor space, and will be enlarged as conditions require.

Should orders materialize for which William A. Fisher, president of the Fisher Body Corp., has started negotiation, Detroit will become the center of the bus body building industry in this country. Most of the orders are expected to come from the Yellow Truck and Coach Manufacturing Co. Several bus bodies have already been built for this company.

Negotiations leading to the purchase of the Buick plant have been under way for some time, but final action was delayed until Fisher engineers and officials had assured themselves of certain problems entering into the manufacture of bus bodies, which are different than those encountered in the building of passenger car bodies.

In a statement issued regarding the purchase, Mr. Fisher said:

> Upon finding the conditions entering into the manufacture of bus bodies, the Fisher Body Corp. immediately began an intensive study by experts of the engineering, operating, economic, manufacturing, standarization problems and as a result is now entering the field on a production scale that was unbelievable a few months ago.
>
> This is possible only because of the close working arrangements existing between the Fisher Body and the Yellow Coach due to the acquisition of a majority of the latter's common stock by General Motors.

President's Oil Probe Board Ends Research

WASHINGTON, Aug. 6—The President's oil board, which has been making an exhaustive inquiry into the nation's petroleum problems with a view to devising a national policy for greater conservation of the country's oil reserves, and more efficient methods of production, distribution, refining, etc., has about completed the first phase of its program, it was announced here this week.

A public hearing will be held in this city, to which will be invited the presidents of six or eight of the greatest oil corporations in America, and these, representative of the different branches of the industry, will be invited to discuss publicly their views and offer suggestions for the conservation or best use in the future of the nation's oil reserves.

GOODYEAR FIGURES ON COASTWISE ZEPPELIN

AKRON, OHIO, Aug. 7—Officials of the Goodyear-Zeppelin Corp. have been asked to quote figures on the construction of a 1,000,000 cubic foot rigid airship, presumably for use in eastern coastwise service in this country.

Capt. Anton Heinen, late of the German Zeppelin organization and one of the experts who navigated the ZR-3 from Freidrichshafen, Germany, to Lakehurst, N. J., last fall, is understood to be interested in a new operating company. An Atlantic City-New York airship company is reported to have been formed in Atlantic City. Goodyear is expected to build one or more ships for this company, which plans to operate a coast wise line.

Olds Motor Works Opens Two New Factory Branches

LANSING, Aug. 6—Establishment of two direct factory branches, one in New York city and the other in Chicago, has been announced by the Olds Motor Works. The establishment of the two branches has been made possible by the taking over of the Larson Oldsmobile Co. of New York and the W. V. Faunce Co., Oldsmobile distributor for the Chicago district.

Under the new arrangements, the Larson Oldsmobile Co. will devote its entire time to retail sales of Oldsmobiles in greater New York, Westchester County, N. Y., and Essex and Hudson counties in New Jersey. The New York branch will conduct the wholesale business of the Eastern New York territory.

Mr. Faunce will continue as an Oldsmobile distributor in Pittsburgh where the W. V. Faunce Co. has been established for some time.

AUBURN ADDS MODELS

AUBURN, IND., Aug. 5—The Auburn Automobile Co. has announced the addition of touring cars to both its 6-66 and 8-88 lines. The 6-cylinder touring car is priced at $1,395 and the 8-cylinder touring at $1,995. The equipment on both models includes sun visor, windshield wings, front and rear bumpers, spare tire and cover, and motometer. The finish is a two-tone lacquer and genuine leather upholstery is used.

ORGANIZE PUMP JACK CO.

PRESCOTT, WIS., Aug. 6—Organization of the Prescott Pump Jack Co. is reported by the incorporators, L. E. Jones, P. J. House and Charles H. Wolf. The company will manufacture pump jacks and other types of automotive equipment. Capital is $15,000.

Plans for Expansion Indicate Prosperity

Big Automobile Manufacturers Extend for Increased Business Expected During 1926

DETROIT, Aug. 7—Some idea of what the automotive industry is expecting during the coming 1925-26 season may be had from the expansion plans now in progress at several of the different manufacturing plants in this vicinity. They indicate that the industry is going ahead on stable grounds and that the sensible policy followed this year will be continued during 1926.

In this connection, one may think that the saturation point is something that cannot be located or estimated as the plans now call for greatly increased production. This is accounted for in the belief that the different manufacturers thoroughly believe in their product and say that with past owners as part advertisers they are going ahead on the biggest basis in history.

It is safe to say that in view of these facts that 1925-26 will be the best and greatest year in the history of the industry. This will not be true with all manufacturers for it is certain that some will not be here next year, but for the industry as a whole 1926 seems likely to surpass the past.

Jan. 1, 1926, will see the $8,000,000 building program of Dodge Brothers, Inc., completed and also their contemplated daily output of 1500 cars reached; it will see Hudson-Essex on a production schedule of 2000 cars a day and with increased facilities, in fact this output is scheduled to be reached long before Jan. 1; Chrysler Corp. is also going ahead with extensive factory building plans, likewise Packard; Paige-Detroit Motor Car Co. is completing its new experimental plant with a view to carrying on extensive experiments. These are but some of the improvements and expansions being made to make the coming year what indications point out—the best in automotive history.

Equip Canadian Fords with Nickeled Radiators

DETROIT, Aug. 6—The Ford Motor Co. of Canada, Ltd., is now equipping all closed cars with nickel plated radiators and radiator aprons. The change was designed to give a better finish to the car.

The change is in line with the company's policy of altering the car to meet with the demands of the public. While the new radiator has only been on the market a short time, the manner in which it has been received by automobile owners is taken by officials of the company to mean that its advent will be a popular one.

Coming Events

SHOWS

Sept. 8-11—New Haven, Mason Laboratory, Yale University Machine Tool Exhibition, direction of Amer. Society of Mech. Eng., Chamber of Commerce and Yale Mechanical Engineering Department.

Sept. 14-19 — Cleveland, Public Auditorium, Annual Convention and Exposition, American Society for Steel Treating, W. H. Eisenman, secretary.

Sept. 21-26—London, England, Annual Cycle and Motorcycle Show under auspices of the British Cycle and Motorcycle Manufacturers and Traders Union, Ltd.

Sept. 28-Oct. 3—Chicago, Fourteenth annual Safety Congress and Exhibit, Rainbow Room, Hotel Winton, under direction of National Safety Council, A. M. Smith, business manager.

Oct. 5-9—Atlantic City, Young's Million Dollar Pier, Manufacturers' Exhibition in connection with American Electric Railway Association Convention.

Oct. 8-17—London, Olympia passenger car show.

Oct. 18-31 — Salonica, Greece, First International Sample Fair.

Oct. 29-Nov. 7—London, annual truck show.

Nov. 26 - Dec. 6 — Berlin, Germany, Annual Automobile Show in the Kaiserdamm.

CONVENTIONS

Sept. 14-19 — Cleveland, Public Auditorium, Annual Convention and Exposition, American Society for Steel Treating.

Sept. 14-17 — Automotive Electric Association, Forest Inn, Eaglesmere Park, Pa.

Oct. 5-9—Atlantic City, Young's Million Dollar Pier, American Electric Railway Association.

Oct. 7-10—Montreal, Motor and Accessory Manufacturers Association Convention.

RACES

Sept. 7—Altoona, Pa.

Sept. 19—Syracuse, N. Y.

Sept. 30—Fresno, Cal.

Oct. 10—Baltimore-Washington Speedway, Laurel, Md.

Oct. 12—Salem, N. H.

Oct. 24—Charlotte, N. C.

Nov. 26—Los Angeles.

S.A.E. MEETINGS

National

Aug. 27—Hotel Commodore, New York, Motorboat Meeting.

Sept. 15-16—Cleveland, Production meeting and exhibition.

Nov. 12-13—Philadelphia, Automotive Transportation meeting.

Nov. — Service Engineering meeting.

Bus Revolutionizes Traffic in Michigan

More Than 1,000 Operating in State Represent Investment of $5,000,000

LANSING, Aug. 6—Michigan is experiencing a great economic revolution at the present time due to the development of the motor bus service now under way in this State. The revolution, according to William W. Potter, commissioner of the State Public Utilities, has been going on to a marked degree since 1923.

The following figures from Commissioner Potter's office show to what degree the bus has crept in upon transportation in this State. The figures are from the first of the year until the present time.

1,000 Buses Operating

On Jan. 1 there were 541 highway buses operating in the State with an investment of $3,244,830; today there are more than 1000 buses in operation with a total investment exceeding $5,000,000. In January the buses averaged 65,000 miles a day, today the average is 115,000. These increases have helped to raise the number of bus operators from 158 to more than 200. These figures do not include the buses operated wholly within the different cities which are also increasing daily.

The increase in the number of applications for freight and passenger service which has amounted to 74 since Jan. 1 can be seen in the number of passengers carried. In 1924 highway buses carried 16,000,000 while buses in the City of Detroit carried 24,000,000. This year the increase has been around 25 per cent which will make the number of passengers carried on highway buses for 1925 around 20,000,000 at the present rate.

In contrast to this is the decrease in the number of passengers carried by steam and electric railroads. In 1913 Michigan steam railroads carried 23,000,000. In ten years this number had decreased to 11,000,000 in 1923. Since 1923 the traffic on electric roads has decreased 25 per cent.

Some of the bus companies are now planning to add parlor buses and the addition of these is expected to increase the number of passengers, especially on the longer hauls.

DRIVE 3,965 MILES WITHOUT STOPPING

NEW YORK, Aug. 6—The eight-cylinder Packard which was driven from Los Angeles to New York without stop by Lieut. Leigh Wade, around-the-world flier, and his companion, Linton Wells, a newspaper man, has been driven back westward to Detroit. The motor was kept running in New York and the return to the Michigan city was the last leg of the long journey.

The car was driven out of Los Angeles on Thursday, July 16, and arrived in New York July 25, covering the distance of 3,965 miles without stopping the wheels. At Irvington-On-Hudson a traffic policeman arrested Wade for passing to the left of a truck. Wells accepted the summons and explained, while Wade drove on.

The passengers ate "on the run," taking turns at sleeping. In Missouri they ran into "gumbo" mud which slowed their progress so that they required 26 hours to pass through territory which they had figured on leaving behind in 12 hours. They changed a tire on a rolling jack and took gasoline into a fifty-gallon reserve tank connected by feed pipe to the main tank.

The car was equipped with two horns for emergency, one a Bosch, the other a Tria-horn. According to Wade they needed both of them many times in order to shove through stubborn traffic.

U. S. Uses 79 Per Cent of Gasoline Produced

Per Capita Annual Consumption Totals 69.3 Gallons, Says Commerce Department

WASHINGTON, Aug. 5—Although there is a rapidly growing tendency in all sections of the world to "step on the gas," the United States continues to far outstrip all her combined competitors in the consumption of gasoline, by utilizing more than 79 per cent of the total world production, according to a bulletin on "World Trade in Gasoline" just made public here by the Department of Commerce.

The relative importance of the United States in the gasoline industry is emphasized by the fact that our per capita annual consumption totals 69.3 gallons, while the next largest consumer of gasoline, the United Kingdom, averages only 11.6 gallons. England requires annually a quantity of gasoline equal to about 7 per cent of the American demand, while the total annual consumption of China, for example, is equivalent to about eight hours' supply in the United States.

American production has grown from less than 1,500,000,000 gallons in 1914 to nearly 9,000,000,000 gallons in 1924, an increase of nearly 500 per cent. In addition to using about 79 per cent of the total world consumption at home, this country in 1924 exported gasoline products amounting to over $160,000,000, constituting an important item in our total merchandise exports during that year.

CONTROL MOLINE BODY CORP.

MOLINE, ILL., Aug. 5—The E. H. Wilson Manufacturing Co. has been organized to take over the business of the Moline Body Corp. and will continue the production of automobile bodies, hoods, fenders and sheet metal parts. Officers and directors of the old corporation continue.

AUTOMOTIVE INDUSTRIES
VOLUME 53 *New York, Thursday, August 13, 1925* NUMBER 7

Parts Makers' Profits This Year Ahead of 1924 by Wide Margin

Signs point to continued activity during the remainder of 1925. Parts manufacturers sharing equally with car builders in current prosperity, balance sheets show.

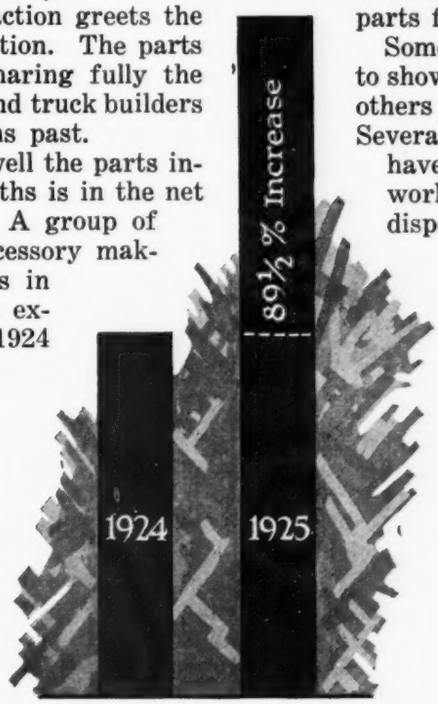
PARTS and accessory manufacturers are a lot happier people today than they were just about twelve months ago. If somebody inadvertently mentioned the word "profits" last August, the corners of their mouths took a downward turn and a tale of woe was very likely to be forthcoming—not from all of them to be sure, but from a good many.

But today a quiet smile of satisfaction greets the entrance of profits into the conversation. The parts and accessory makers have been sharing fully the prosperity which the passenger car and truck builders have been enjoying for some months past.

The best visible evidence of how well the parts industry came out in the first six months is in the net profits earned during that period. A group of eight well established parts and accessory makers, for example, earned net profits in the first six months of 1925 which exceeded those of the same period in 1924 by no less than 89.5 per cent. The list of companies in this group included makers of tires, bodies, axles, universal joints, magnetos, bodies and engines—a diversified list of products—indicating that good business has been general throughout the field and has not been confined to any particular units.

Some companies have made greater strides than others, of course, while profits for the first half of this year didn't come up to the 1924 level in some instances, but the percentage increase of 89.5 tells the general story clearly.

Advances over the first half of 1924 were very striking in some cases. B. F. Goodrich Co., for example, reports a net profit of $7,106,615 for the first half of this year as opposed to only $2,755,017 for the same period last year; Stewart-Warner Speedometer Corp. made $3,466,972 as against $2,009,555; Spicer Mfg. Co., made $966,169 as against $703,644, and American Bosch Magneto Corp. made $241,895 as against $174,980. The list could be lengthened considerably but the examples cited are enough to form the sound basis upon which current optimism in the parts field is resting.



Parts Profits

A GROUP of eight representative parts and accessory companies earned 89.5 per cent more in the first six months of 1925 than in the same period of 1924.

Some of the body companies have failed to show up as well as might be expected, but others have recorded substantial progress. Several car manufacturers in the last year have let additional contracts for body work to outside builders, indicating a disposition to leave at least this one phase of their work to outside specialists to a greater rather than to a lesser extent than in the past.

Good business in the parts field has been continuing during July and August, with the result that reasonably good profits for the rest of the year are expected by most executives in this field. Several group meetings of parts makers were held in the latter part of July and the general opinion of executives attending was that the last six months of 1925 promise to go ahead of the same period last year by a comfortable margin. It was admitted, at the same time, that the August-December business might not equal that of the January-July period, although optimists were not lacking who look for continued advances.

The present prosperity of the parts business is due fundamentally to about the same factors as is that of the vehicle field. Increased production in itself has operated to reduce overhead cost

per unit. In addition, actual decreases in overhead have been effected in many organizations. Greater labor productivity, in the parts as in the vehicle factories, partly through better handling of human factors and partly through use of more efficient machine equipment, also has played its part. Recent communications from important parts companies indicate that the number of men employed per unit of production is considerably lower today than it was a year ago.

That the parts and accessory factories have been operating near to capacity and that they have been sharing fully in the prosperity which has accrued to the vehicle makers is indicated by the survey made in July by Neal Adair, educational director, Motor and Accessory Manufacturers' Association. This survey showed, among other things, that 14 parts and accessory manufacturers, selling only for original equipment, operated their plants at 85 per cent of capacity during the first six months of 1925, while 14 which sell both to manufacturers and to the trade operated at 81 per cent of capacity.

Even though vehicle production should fall off in the last half year—and present indications are that it will not to any material extent — the parts business seems assured of being able to operate well above normal throughout the year, however optimistically that term may be defined. This indication is borne out by the fact that there is no evidence of overstocking or unbalanced inventories anywhere in the industry so far as can be determined. Car manufacturers, while buying with more confidence than they were last August, still are adhering to the policy of keeping production pretty well in line with retail sales and consequently are handling their purchases on a conservative basis.

Those parts and accessory companies which rely chiefly on the jobber and retail trade for their distribution, as well as the original equipment producers, have reason to look forward to the rest of 1925 with confidence. The *Motor World Wholesale* survey of jobber business on the first of August shows business to be fair in practically all lines and in nearly every part of the country. Out of the nine zones and six major classes of equipment included in the survey, radio sales are the only ones reported poor over any considerable areas, although Ford replacement sales among the jobbers are not good in the Northeast nor in some parts of Texas and adjoining states. Since this survey is based on reports from more than 400 carefully selected jobbers it can be accepted as a thoroughly competent guide to conditions.

Through all this generally optimistic opinion, there runs, of course, individual stories of failure, of decreasing business and low profits. Some cases of this kind always appear in the business structure of every industry and in any part of the business cycle. But the tone of pessimism is lower at present than at any time in the last two years. August business has held up better than anyone dared hope. This applies all along the line; to original equipment suppliers, to parts and accessory factories selling only to the trade, to car and truck builders and to the wholesale and retail fields as well.

But the tendency to expand conservatively and to watch business trends closely is the thing that gives most promise for a continuance of sound conditions. The automotive industry has been known to lose its head when good business kept up longer than was expected and when orders kept on mounting with surprising rapidity.

Factories have been known to expand too rapidly; to grow to quickly in an attempt to get the last dollar out of a peak demand period; and then to find the pains of contraction quite severe. These things have happened; the industry is not entirely recovered yet, as a matter of fact, from the effects of its previous mistakes along this line.

There seems little likelihood that these mistakes will be repeated to any great extent during the present period of prosperity. The car producing capacity of the country undoubtedly will be increased considerably before this year is over and there is little chance that the differential between capacity and demand will be decreased. But no great orgy of expansion is under way and none is likely. The lesson of too much overhead has been pretty well learned by the automotive industry. Unless it is forgotten the future should be safe from at least that one bugaboo.

REPRESENTATIVE parts makers have increased profits this year in about the same proportion as have representative car and truck companies.

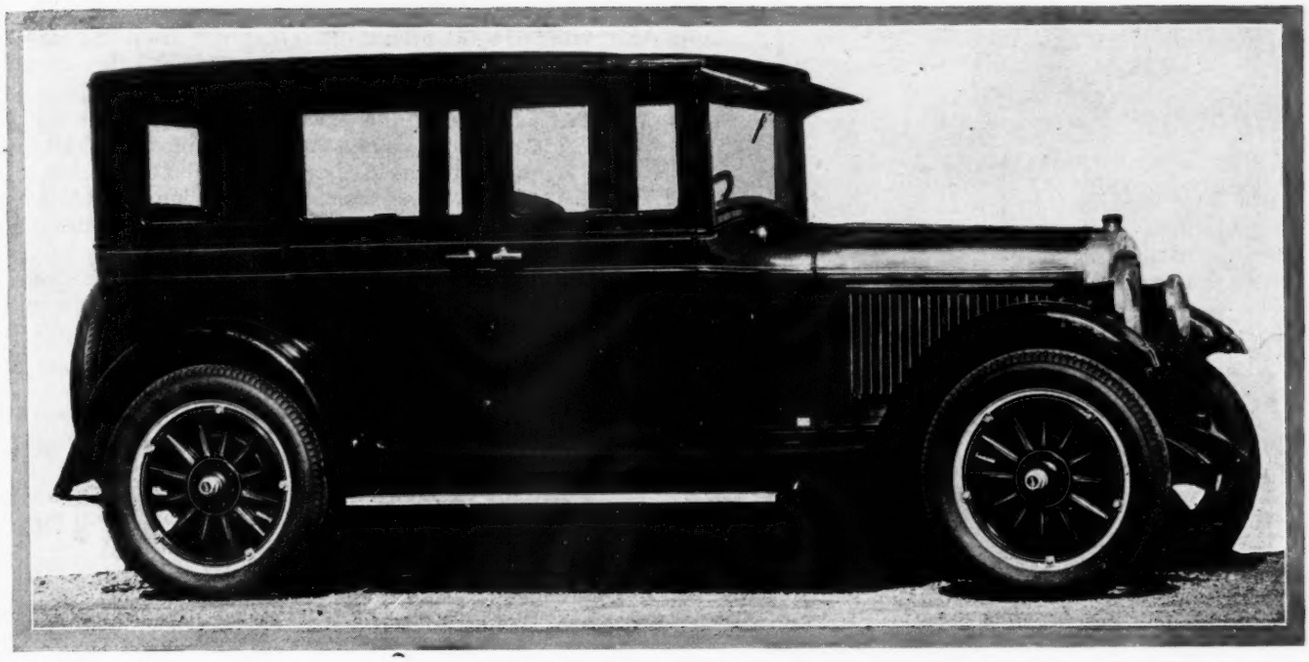
Individual comparisons can be made to dispute this statement but a general summary of both branches of the industry indicates its truth.

The parts makers are participating fully in the era of good times through which the industry now is passing.

The increased profits made by parts companies this year puts into the discard also one of the wails that was much heard a while ago. It ran something like this:

"The parts makers never have really good times any more. When business is bad they suffer, naturally, just as do the car and truck people. They have no business and prices are low. When business gets good, still competition in the parts field is very keen and parts makers can't make much of a profit anyhow; some of the original equipment they have to sell practically for cost or at a loss. So the way of the parts maker is hard in any case. He suffers the hard times with the rest of the industry and doesn't get the 'gravy' to make up for it in good times as does the vehicle manufacturer."

The figures prove otherwise. Representative parts makers have increased profits this year in about the same proportion as have representative car and truck manufacturers. Individual comparisons could be made to dispute this statement, but the general summary of both branches of the industry indicates its truth. The parts makers are participating fully in the era of good times through which the industry now is passing.



New Oldsmobile Six standard sedan

Oldsmobile Increases Engine Output, Adopts Chain Front End Drive

Inlet valves enlarged to give more power. Number of models reduced from ten to six. Body lines improved. Prices are cut $15 to $260.

By L. S. Gillette

IN presenting a new series of Oldsmobile Six cars, the current trend toward lower prices, finer bodies, improved engine performance, chassis refinements and fewer body models, which has characterized all the recent announcements of the car divisions of the General Motors Corporation, is again in evidence.

By concentrating production on three body styles each in the Standard and De Luxe models, and improving quantity manufacturing methods, the Olds Motor Works has reduced prices from $15 to $260. Six models are now being made instead of ten.

As in the case of the other recent reductions in price by the General Motors companies, the greatest cuts have been made on the closed cars. Comparing the touring model with the coach in the Standard line, the difference in price is now only $75, as against $185 formerly.

Changes in the springs, shackles and wheel dimensions, together with the new body lines, give the latest models a decidedly low-hung appearance. The general appearance of the bodies is improved by slightly reducing the height of the roofs and the use of a molding extending from the radiator entirely around the car, while on the closed cars this molding accentuates the double-belt effect which is now so popular. Two-color Duco finish with attractive and contrasting striping is used on all models. The upholstery is a heavy cord plush on the closed styles and on the touring cars a genuine Spanish leather.

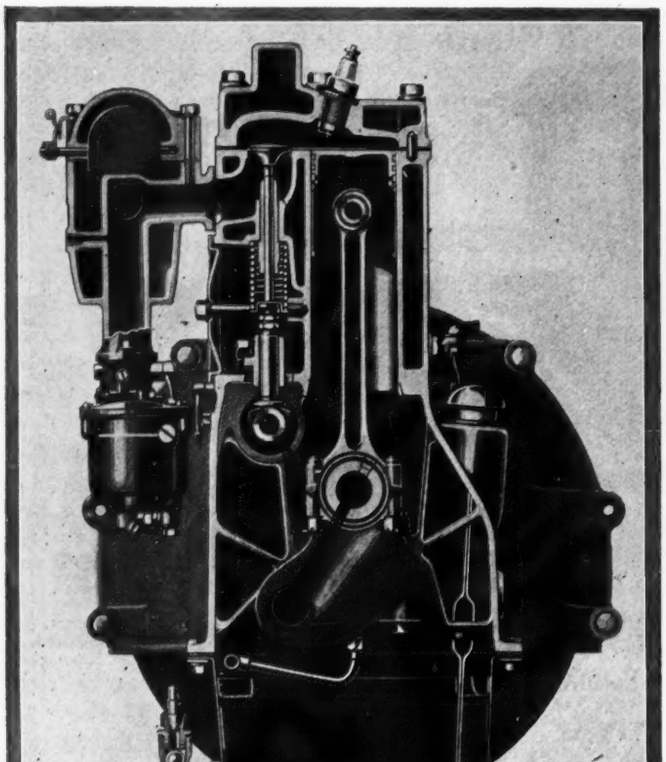
Without making any radical changes in the engine except the adoption of a chain drive at the front end in place of the former combination gear layout, the power output has been increased over 12 per cent by alterations in the valve mechanism, reduction in piston weight, more effective piston ring arrangement and improvements in the oiling system.

Substituting a Morse chain for the triangular front end drive instead of the helical gears has necessitated minor changes in the crankshaft and camshaft to accommodate the sprocket mountings, with corresponding changes in

OLDSMOBILE has eliminated four models and effected price reductions ranging from $15 to $260 on the remaining six. The models comprising the new line and a comparison of old and new prices follow:

STANDARD	Old Price	New Price	DE LUXE	Old Price	New Price
Touring ..	$890	$875	Touring ..	$1,015	$980
Coach	1,075	950	Coach	1,150	1,040
Sedan	1,285	1,025	Sedan	1,375	1,115

The models discontinued are the Standard Roadster, Sport Roadster, Coupe and Business Coupe.



Cross section through Oldsmobile engine, showing larger inlet valve and piston with narrow upper rings and increased depth of skirt

the front end cover and cylinder block. Chain adjustment is accomplished through radial movement of the generator, which has elongated slots in its support flange and is provided with an accessible adjusting screw and lock nut.

To the important changes in the valve mechanism may be credited most of the increased power that the new engines are developing. By enlarging the diameter of the inlet valve from 1 5/16 in. to 1½ in., not only is the engine able to draw in a heavier charge of vapor, resulting in greater power strokes, but the manufacturing and service problems have been simplified, as both inlet and exhaust are of the same size and consequently now interchangeable.

Lengthening the valve lift by 1/32 in. and increasing the rate of the valve opening has been obtained by changes in the cam contours, which are now nearly sharp nosed.

Cast Iron Bearings

In addition to the revisions made at the front end, the center and rear bearings of the camshaft, instead of being of bronze, as on the previous models, are now of cast iron and correspond with the front bearing, which has been of this material for some time. Concurrent with these changes, all bearings have been made removable and the diameter of the center bearing journal has been increased to 1 13/16 in. The valve lifter bracket, which supports six lifters in a nest, has been simplified through the elimination of two locking screws formerly employed in retaining the bracket to the upper portion of the crankcase so that the new bracket is held by the remaining three screws which enter the cylinder block base.

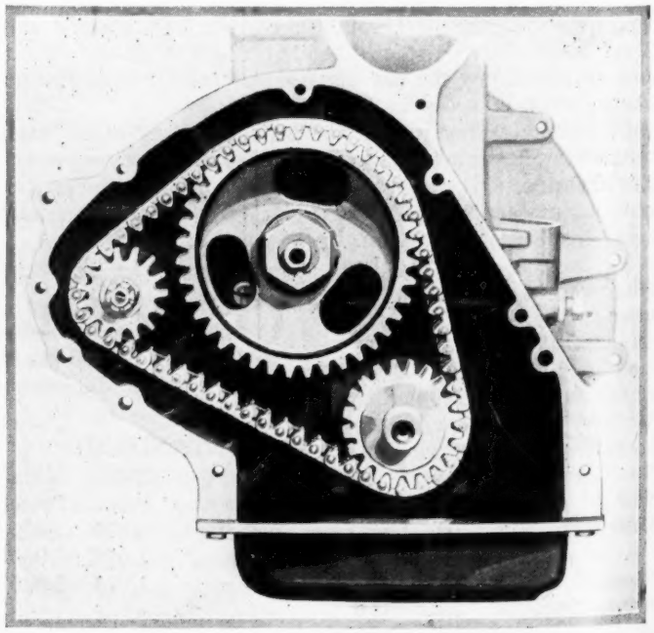
Besides the changes already mentioned on account of the employing of a chain drive front end, the oil-return grooves on the rear end of the crankshaft have been shortened to prevent entrance of dirt into the oil pan, while the oil outlets in the crankpins are moved from the inner to the outer side of the pins to accelerate the flow of oil to the cylinders. Including the changes at the front end, the crankcase has been altered to provide a better seal against dirt working into the rear main crankshaft bearing by improving the design of the oil fling pocket. Because of the reverse rotation of the gears, due to the adoption of the chain drive, several changes have been made in the oil pump, which is now considerably more effective. The location of the pump itself has in no way been altered, as it still is carried on the outside of the timing chain cover.

Piston Weight Reduced

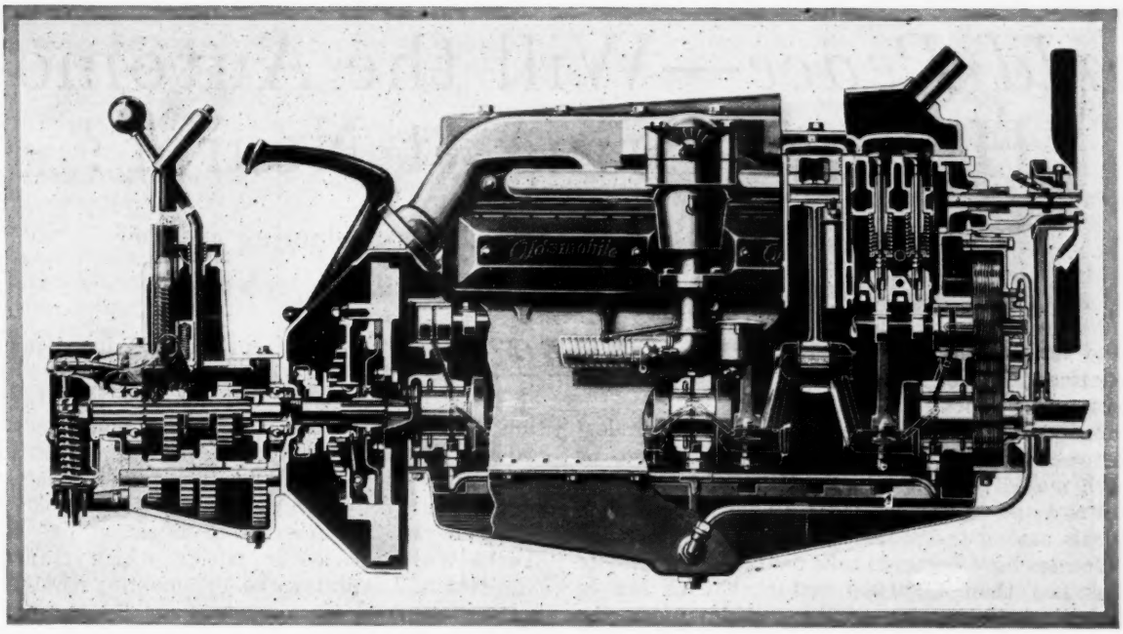
Through careful design, the weight of the cast iron pistons has been reduced from approximately 16 oz. to 14 oz. Three step-type joint compression rings of 3/16-in. width formerly employed are now replaced by two ⅛-in. rings with a third or lower combination oil regulating and compression ring of 3/16-in. width. The functioning of the wider ring is supplemented by a series of holes drilled through the piston behind the ring. Although the total length of the piston has not been changed, the use of two narrow compression rings has reduced the depth of the "land" portion of the piston, leaving a proportionately longer skirt.

Other power plant changes consist of reducing the clutch pedal pressure so that the pressure on the pedal pad now ranges between 25 lb. and 30 lb., making for softer pedal action and easier operation. At the same time the clutch release operates on a special patent graphite bearing which is self-lubricating, noiseless and requires no attention. Also the gear shift lever has been lengthened four inches and the fulcrum point lowered 1¼ in. to provide easier shifting.

Lower center of gravity for the car and improved riding comfort has been attained by shortening the spring shackles by ½ in., reducing the camber of the springs and using smaller diameter wheels, the last mentioned carrying 30 by 4.75 in. tires in place of the former 31 by 4.75 in. The rear springs on all models are ⅜ in. shorter from the center line of the axle to the rear spring eye and the leaf spring gauge on the chassis for the sedan models has



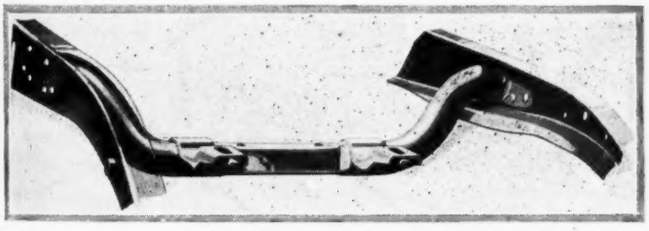
Morse chain front end drive, a new feature of the Oldsmobile



Cut-away view of new Oldsmobile powerplant, showing the chain front end drive, self-lubricating clutch throw-out bearing, improved oil seal at rear main bearing and other features

been slightly increased. These changes have resulted in a total drop in frame height of 11/16 in. in relation to the road.

To provide greater rigidity for the frame, the wide flat pressed channel member forward of the engine is replaced by a tubular cross member which relieves the engine of



New tubular cross member which replaces the former wide flat-pressed channel member forward of the engine on the Oldsmobile

practically all strains through the weaving of the frame. The only other changes on the chassis are the shortening of the steering column by one inch to give a more comfortable driving position for the driver and a simplified rearrangement of the controls at the base of the steering post.

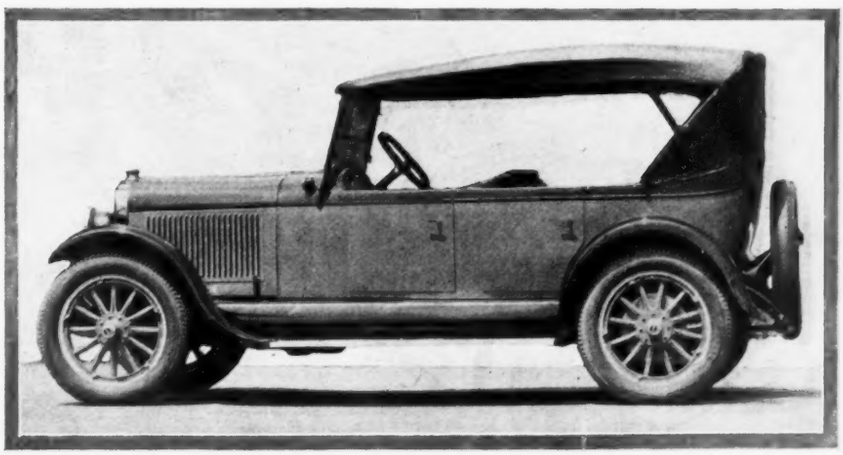
In addition to the lines of the new bodies, the general appearance of the cars has been improved by carrying the hood louvres in a vertical position instead of at an angle and the employing of new fenders of enlarged crown, increased width and deeper lips. The rear fenders as well as the wheel housings have been lowered by ½ in.

On the open models only one strip of molding is used, this strip extending from the radiator entirely around the body. Above the molding a moleskin gray is employed and blends pleasantly with the general color of the car, which is an attractive shade of Russian brown. Red striping is used just under the belt line, on the hood louvres and on the wheels.

All closed bodies are enhanced by a panel or belt 4½ in. wide and formed by two beadings which run from the cowl around the body, the lower moulding extending on to the radiator. One inch has been taken from the overall height by lowering the roofs without affecting the amount of head room in the interiors. Doors of the sedan have been widened by 1 13/16 in. while those on the coach have been increased by 3½ in. Further, the inside overall length of the latter model is longer by 1½ in. while the front seats of all closed cars have been tilted back at a slightly greater angle.

Both coach models are finished in Buckingham gray Duco with black Duco on the upper body panels. A fine green striping sets off the panel, hood and wheels. Aquamarine blue with white striping and black upper structure is the color scheme on the sedans. Heavy cord upholstery of a neutral shade is employed for the closed cars.

De Luxe or "sport" models are regularly equipped with disk wheels, trunk rack, black enameled trunk, luggage rails, bumpers, kick plates, motometer, rear view mirror, spot light and snubbers all around. The sport touring has windshield wings and natural wood wheels are optional. A K-S Telegage on the dash, showing the amount of fuel in the tank, is used on the sedans.



The Oldsmobile touring

World Peace—Will the Automobile Help to Bring It Nearer?

Rapid increase in use of motor vehicles is promoting a closer understanding between nations. Friendship growing.

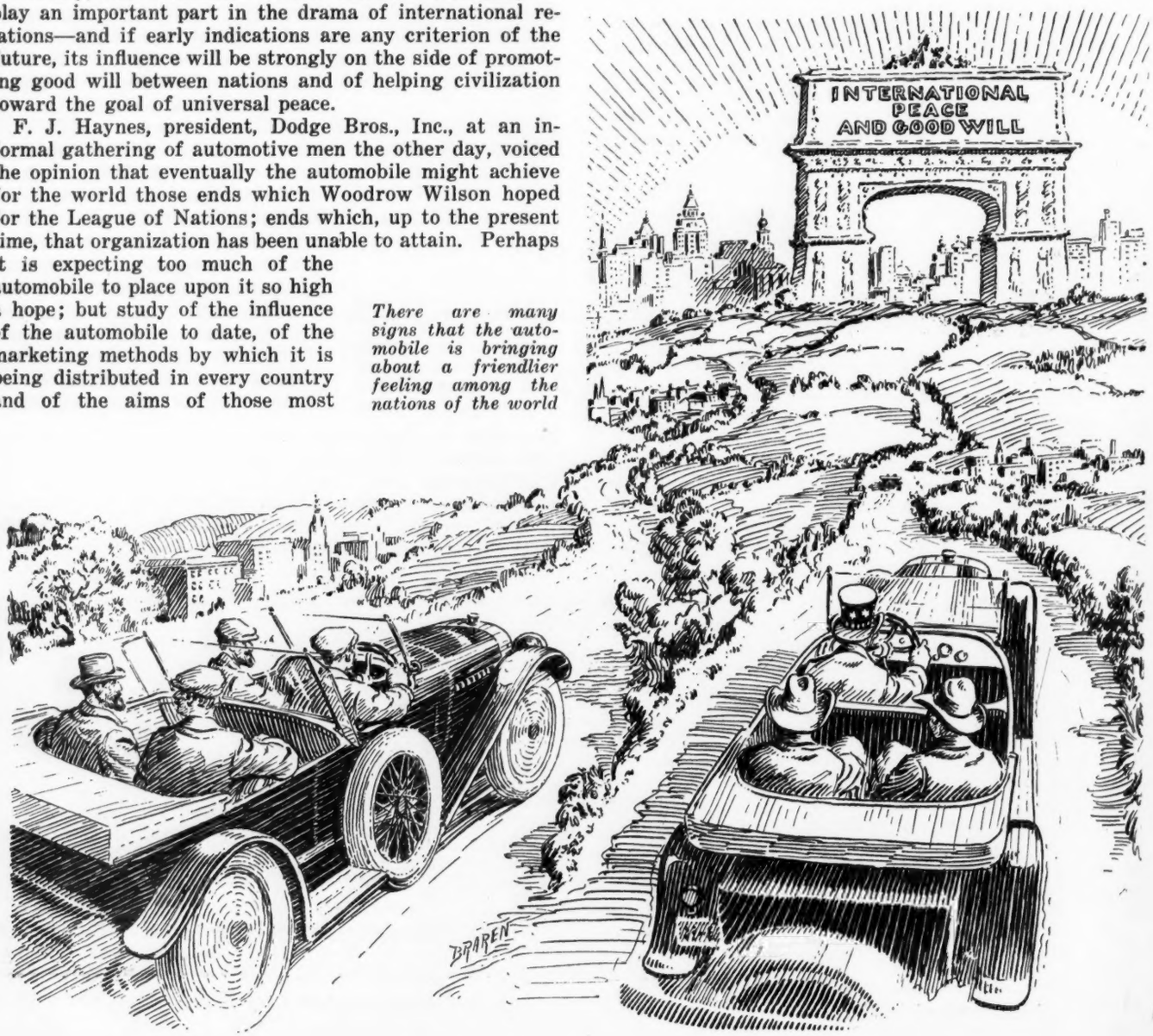
By Norman G. Shidle

CAN the automobile carry the nations of the world to permanent peace? Already its influence has helped to bring about better understanding between nations, to facilitate the exchange of ideas through more frequent intermingling of citizens of various countries and to broaden mutual knowledge of customs and ideals among the peoples of all lands.

These tendencies have begun to take definite form despite the fact that less than 4,000,000 motor vehicles are in operation in all the countries of the world outside the United States. With every indication that automobile use will multiply 10 to 15 fold within the next quarter of a century, the automobile seems destined eventually to play an important part in the drama of international relations—and if early indications are any criterion of the future, its influence will be strongly on the side of promoting good will between nations and of helping civilization toward the goal of universal peace.

F. J. Haynes, president, Dodge Bros., Inc., at an informal gathering of automotive men the other day, voiced the opinion that eventually the automobile might achieve for the world those ends which Woodrow Wilson hoped for the League of Nations; ends which, up to the present time, that organization has been unable to attain. Perhaps it is expecting too much of the automobile to place upon it so high a hope; but study of the influence of the automobile to date, of the marketing methods by which it is being distributed in every country and of the aims of those most prominent in determining its future course tend to the conclusion that Mr. Haynes' prediction some day may prove more fact than fancy.

That the motor vehicle has great possibilities as an agent of destruction and as a powerful offensive weapon in waging war is not to be denied. The tank corps which saved the British arms from defeat at one stage of the World War, the motor trucks which transported ammunition and supplies, the automobiles which whisked officers about from place to place and the motorcycles which bore dispatch riders about at high speed—all of these have proved the necessity and potency of the motor vehicle



There are many signs that the automobile is bringing about a friendlier feeling among the nations of the world

as a modern engine of war.

But the spread and usage of motor vehicles in general tends definitely to promote peace. Their utilization in time of war in no sense argues their influence as favorng international discord. When war comes, the motor vehicle is requisitioned to do its part. But once the actual fighting is over the peace-promoting proclivities of the automobile once more become evident as its effect on people and races is studied.

The automobile promotes peace primarily, of course, by providing easy, cheap individual transportation which permits and encourages people to go about from one place to another. In this going about they inevitably learn more about their neighbors, get a better understanding of the ideals and modes of thought of other people and in general widen their intellectual horizons.

The development of the United States itself during the last twenty-five years may be used as an example of how the motor car helps to bring about fuller exchange of ideas. With more than 17,500,000 motor vehicles in operation in the country today, it is probable that less than 25 per cent of the population consists of people who have never been in any State except their own; perhaps the proportion of these super-provincials is less than 10 per cent of the 113,500,000 people in the country. The traveling about from State to State, which is done annually by hundreds of thousands of tourists, cannot help but influence indirectly the thought of our people as regards one another. And in so far as misunderstanding is the cause of disputes, the prevalence of touring tends toward elimination of discord.

Perhaps it should be stated quickly—before any readers who are suffering from Menkenitis start cynicizing this idea to death—that nobody with sense would expect the automobile to operate as some sort of international medicine for the prevention of war. We realize also that there are holes in the example of the United States. It can be said readily that intermingling of people from different places may promote discord as well as understanding; that the more you see of some people the less you like them and the best way to keep the peace and prevent misunderstandings is to keep conflicting ideas away from one another. That's a great idea, of course, but the trouble is it doesn't work. Sooner or later every prejudice in this world is likely to come into contact with its opposing prejudice and, fundamentally speaking, only understanding and mutual recognition of truth can iron out differences.

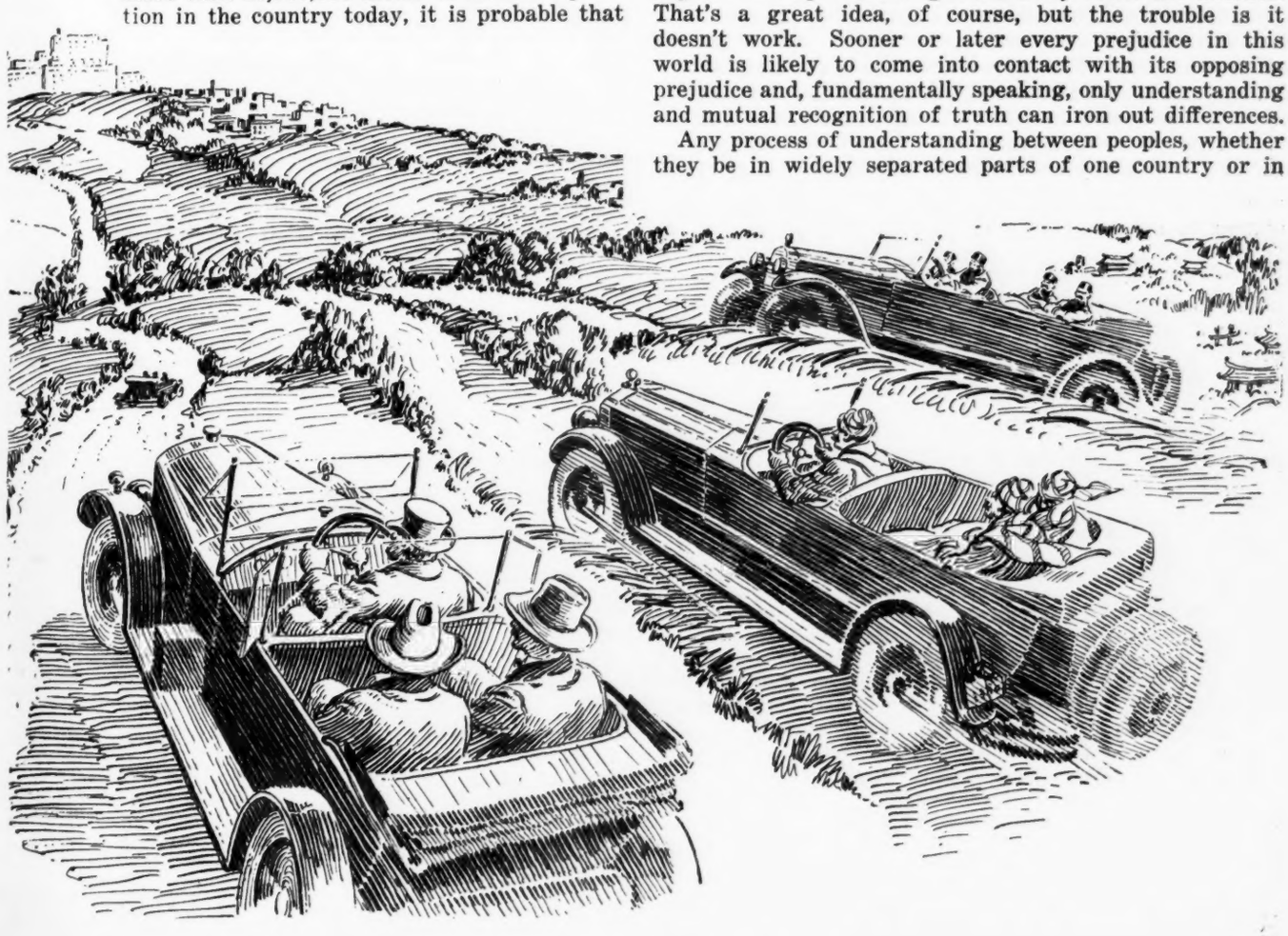
Any process of understanding between peoples, whether they be in widely separated parts of one country or in

The Automobile as a Peacemaker

SO eminent a Southerner as Irvin Cobb is authority for the statement that "If we had had a great number of automobiles in the United States in 1861 it is doubtful if the Civil War ever would have occurred."

The influence of expanding automobile use throughout the world tends strongly to support this statement of Mr. Cobb's, made several years ago at a National Automobile Chamber of Commerce banquet.

The automobile seems destined to play no small part in the drama of international relationships which will be unfolded in the next quarter of a century.



different nations, is certain to require a long period of time. If the automobile does its share in making easier the exchange of mental conceptions about the other fellow it can be said to be doing a real job in the cause of international amity. And that is just the sort of job it is doing.

The increased use of automobiles throughout the world has brought with it a demand for more and better highways. That demand is being met in practically every country on earth. With the automobile and the highway inevitably comes a spread of educational facilities which, as the centuries roll by, may bring mankind in general to a level of thinking which will permit the solution of its problems more nearly in accord with the dictates of reason and less on the basis of emotional prejudices.

Opens Up New Territories

The automobile makes possible also the opening up for commerce and agriculture of new territories hitherto undeveloped. In so doing, it increases the actual production capacity of the earth and helps to provide livable space and adequate production for the support of more human beings—a definite need which has been one of the underlying causes of many wars in the past. If the nations of Europe had had readily available for the use of their inhabitants three times as much land as they did have, there probably never would have been a World War. It is rare for a nation to wage aggressive war so long as it has an excess of land suitable for cultivation and readily accessible to its nationals. By helping to make available for living and agricultural purposes greater and greater areas of the earth's surface, the automobile will tend to relieve economic pressure of the peoples of the earth and, to the extent that it achieves that purpose, render perhaps its most practical service to the cause of peace.

By linking together relatively isolated areas, it helps to facilitate the exchange of commodities as well as of ideas, thus decreasing the unit cost of goods and again helping to relieve in some slight degree at least that economic pressure which is the basis of most modern international wrangles. Whatever relief from economic pressure is given to the governments of the world makes less likely aggressive attempts for greater economic domination.

Changing the Social Structure

The four million motor vehicles now in use outside the United States are scarcely enough to affect strongly the economic life of the nations in which they are operating, except in a few cases where the registration per capita is relatively high. But the experience of the United States itself shows that the increased use of automobiles may alter radically the entire social and economic structure of a country. Fifteen years ago every automobile might have been wiped out of the United States without causing any great disruption in the lives of the people; the progress it has made possible would not have come about, but its lack would not have caused any major social confusion. But imagine what would happen if every automobile in the United States were destroyed tomorrow morning! It would take years for the country to readjust itself, because the motor vehicle has become so much an integral part of our everyday life that a large part of our present mode of living is built around it.

More and more the automobile is coming to occupy a similar place in the other countries of the world. In many areas, to be sure, it still is regarded as a luxury—as a plaything for the rich. But only time is needed for the other countries to pass through the same cycle as did the United States in its appreciation and utilization of the motor vehicle. The influence of four million automobiles is not of major importance in itself; but the number and, in consequence, the influence, is growing every day. It is not outside the bounds of reason to look forward to a total motor vehicle registration for the world in excess of 65,000,000 at some future date. And the influence of 65,000,000 motor vehicles may be of major importance in shaping the life and thought of the nations. It is good to know that that influence will be toward peace.

Because America is the home of automotive development, American business men and American methods seem bound to have a large part in shaping the course of automotive development in other parts of the world. American makers control a very large proportion of foreign automotive markets today and their handling of the distribution of the vehicles which they manufacture will have some bearing on international good will in addition to the influence of the use of the vehicle itself.

Taken as a whole, the ideals and methods being promoted by the leaders of the American industry in selling their products abroad is such as to help actively in advancing international harmony. Detailed cases of unpleasant sales relations, of dissatisfaction among foreigners with Yankee tactics and methods and similar unpleasant instances can easily be cited by anybody who is looking for trouble. But the big outstanding movements for better understanding in which American automobile manufacturers have played a prominent part so far overshadow these petty bickerings as to make the latter scarcely worthy of mention.

World Transport Congress

The most striking of these broad movements toward international good-will fostered by automotive men was the first World Motor Transport Congress which was held in Detroit in May of 1924 under the auspices of the National Automobile Chamber of Commerce. In that meeting were brought together representatives of fifty-four different nations to discuss ways and means of making the automobile a more constructive and more widely used implement for the advancement of civilization.

Meeting for the discussion of business problems, these men from widely varying environments and political backgrounds talked frankly and freely with one another and then went back to their own lands to tell to their fellow citizens the story of what the automobile can do to make life pleasanter and more efficient.

Australians, South Africans and Englishmen with their broad a's and rising inflections told about the widespread use of cars and trucks in their countries and outlined the merchandising questions which they are being called upon to answer. Dusky-hued Egyptians and Jamaicans showed how the motor truck is facilitating the transportation of goods in their homelands and how the passenger car is fast becoming an integral part of their social and economic life. Scandinavians, Germans, Orientals, Latin-Americans and natives of various other climes contributed ideas and took away information.

Better Understanding

And, underlying the whole meeting, there was a growing conception of the mutuality of problems and purposes. The gathering was a definite move in the direction of better understanding between business representatives of an important industry from many lands.

Another of these Congresses is to be held in New York at the time of the New York Show next January. The underlying thought will be the same as that of the first Congress, and the cause of international understanding will be given further impetus through the efforts of the automobile industry.

In the great effort to get better cooperation between the business and commercial interests of the world which

The automobile has opened up many frontiers formerly closed to "the stranger from other lands." Bringing the different nationalities into closer contact constitutes a big step toward the wiping out of racial misunderstandings

is being carried on by the International Chamber of Commerce, representatives of the automotive industry have played an active and inspiring part. Through the motor transport session, over which Roy D. Chapin, chairman of the board, Hudson Motor Car Co., presided, at the Brussels meeting of the Chamber only a few weeks ago, steps were taken to bring together the conflicting viewpoints of various nationals regarding highway and other questions.

America's Message to Europe

American automotive executives have spent much time in Europe and other foreign countries in recent years. Often their visits were made primarily for business purposes, but always they have taken time away from their selfish interests to preach the message of automotive transportation as a civilizing force and as a factor in promoting good will between nations. On numerous occasions the American industry has sent official representatives abroad for this very purpose and has spent money and effort in the interests of better international relationships. Alfred Reeves, general manager of the National Automobile Chamber of Commerce, visited many of the countries of Europe only last year as official spokesman for the American automotive industry, working constantly to promote automobile sales and to show the better living standards which those sales bring about.

John N. Willys, president, Willys-Overland Corp., has just returned from abroad where, as chairman of the N. A. C. C. foreign trade committee, he talked to various groups along the same lines. Roy D. Chapin also returned recently from Europe where a large part of his time was spent in activities having to do with the broader aspects of automotive transportation rather than in the individual interests of his own company. Many other names might be added to the list of American automotive executives who have given and are giving unsparingly of their time to the work of promoting better understanding between nations through the binding force of automotive transportation. H. H. Rice, vice-president, General Motors Corp; George Bauer, secretary of the N. A. C. C. foreign trade committee; J. D. Mooney, president, General Motors Export Corp.; Percy Owen, chief, automotive division, Bureau of Foreign and Domestic Commerce, and a host of others have contributed their service along these lines.

Visitors from the South

The visit of a South American delegation to the United States last year to investigate our road building methods and practices offers another example of the sort of international cooperation which is being fostered by the American automotive industry.

Throughout all of this work, the American industry has taken the attitude that its doors are open to visitors from all lands and that it is glad to give whatever information concerning methods and practices its foreign visitors may desire. It has emphasized the common character of most of the problems facing the automotive transport business throughout the world and the desirability of all countries, whether trade rivals or not, working together that the questions may be answered satisfactorily in the shortest possible time. This thought will be carried forward in the future as in the past. Only the other day Col. Alfred Hacking, secretary and general manager of the Society of Motor Manufacturers and Traders of Great Britain, was the guest of Alfred Reeves at an informal luncheon at which Mr. Reeves, Mr. Haynes and Mr. Rice, in behalf of the American industry, extended a special invitation to a delegation of British manufacturers to come to the World Motor Transport Congress here next January and to inspect anything and everything in the American factories which might be of interest or value. Accepting the invitation, Col. Hacking said that he was sure British manufacturers would be glad to extend similar courtesies to American guests at any time.

The Highway Mission

Another step in the same direction is the American highway mission, headed by H. H. Rice, which is to go to the Pan-American High Congress at Buenos Aires this fall. This mission, too, will do its part toward increasing the possibilities for peaceful cooperation between nations.

Just as the World War began, elaborate preparations were under way for the celebration of 100 years of peace between England and America. If all nations are so fortunate as to preserve the peace for the next century, it seems likely that the automobile and the ideals which are going forward from the industry which is responsible for its production may be able to claim some real part in having achieved so desirable an end.

AUTOMOBILE importers in Buenos Aires are preparing for the biggest sales year in the history of the automobile in Argentina. Two American light cars are now assembling their production in branch factories and the agents of several other importers are prepared to handle cars on a quantity basis by partial assembly locally. Since less than 3 per cent of the automobiles imported are European, the market has resolved itself into one of competition with American firms. Imports of passenger cars during the first five months numbered 20,988. This figure includes cars assembled locally.

New Double Filament Overcomes Dimming Device Objections

Deflects headlight beam downward without reducing its intensity and without moving bulb or reflector. Developed by National Lamp Works. Used on some new cars.

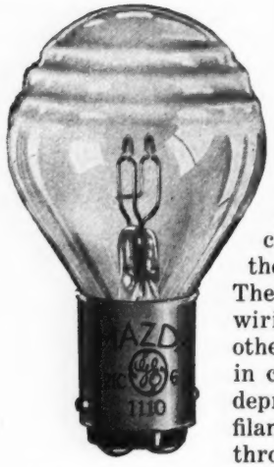


Fig. 1—Double filament bulb, Mazda No. 1116

AS a new solution of the glare problem there has been developed by the National Lamp Works of the General Electric Co., Cleveland, Ohio, a bulb containing two filaments of equal candlepower, one slightly above and the other below the axis of the bulb. The bulb has double contacts and the wiring is so arranged that one or the other of the filaments can be connected in circuit by means of the diming or depressing switch. When one of the filaments is in circuit the beam is thrown ahead in the normal direction so as to illuminate the road ahead for a considerable distance; if the driver switches to the other filament the beam is depressed, falling upon the road much nearer the car, but its intensity remains the same. All annoyance of oncoming drivers or pedestrians by glaring headlights is thus eliminated, and this without the use of any mechanism for moving either the bulb or the reflector.

The new bulb, which is designated as Mazda No. 1116, has a double contact base, and both filaments are rated at 21 candlepower. It is being used as factory equipment on the new Buick and Cadillac models, and its adoption by other manufacturers in the near future is expected.

The normal driving light is provided by the lower of the two filaments and the depressed beam by the upper filament. In Fig. 2 the normal driving beam is shown at the top and the depressed beam (used in passing cars and on rough roads) is shown below.

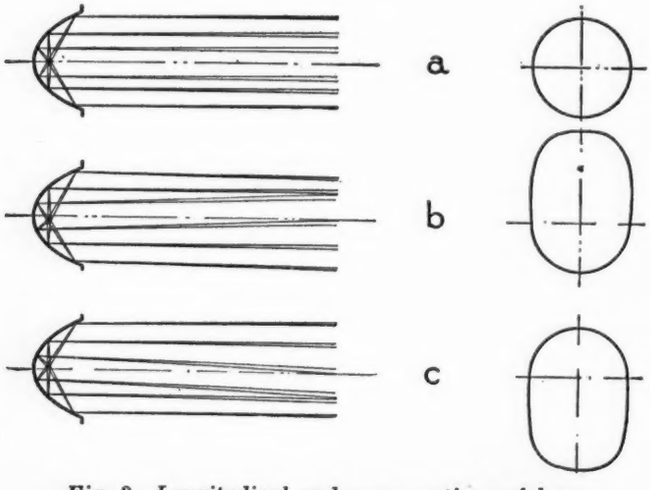


Fig. 3—Longitudinal and cross sections of beam obtained with source of light at, below and above focus, respectively

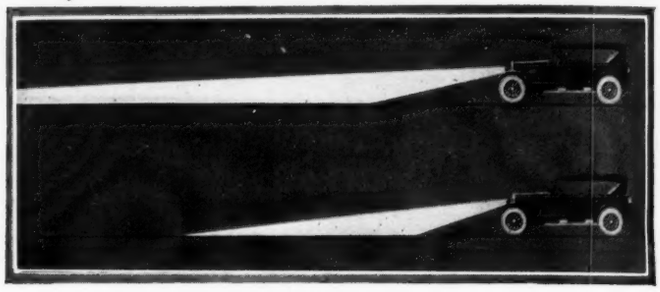


Fig. 2—Diagram showing the normal driving beam and the depressed beam

In Fig. 3 are shown the effects of moving the source of light above and below the focus of a parabolic reflector and the distribution of light obtained with each setting. At *a*, the light source, or filament, is located at the focus and the rays are reflected in a narrow beam which produces a circular spot of light when projected on a vertical screen. If the filament is below the focus, as at *b*, the pattern made by the beam on a vertical screen is extended

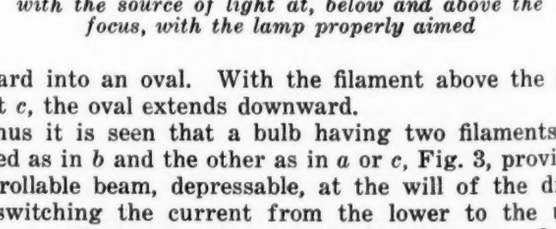


Fig. 4—Relation of the beam to the horizontal with the source of light at, below and above the focus, with the lamp properly aimed

upward into an oval. With the filament above the focus as at *c*, the oval extends downward.

Thus it is seen that a bulb having two filaments, one placed as in *b* and the other as in *a* or *c*, Fig. 3, provides a controllable beam, depressable, at the will of the driver, by switching the current from the lower to the upper filament. Equipped with vertically fluted lenses and tilted so as to bring the top of the beam from *b* level with the top of the headlamps, the light distributions for the different filament positions on a vertical screen are as shown in Fig. 4.

If a greater angle of tilt is desired, all that is necessary is to move the filament further below the focus. However, if the desired angle of tilt is attained with the filament spaced equal distances above and below the focus, then a lamp with filament separated by the same distances, but placed with the lower filament at the focus as in *a*, would give too great an angle of depression or tilt. In other words, under this condition, glare would be avoided but the road would not be illuminated for a sufficient distance ahead of the car.

It is commercially impracticable to make bulbs with

the filaments sufficiently close together so as to give the small angle of tilt which is desired, when one filament is at the focus of a headlight provided with parabolic reflector and vertically fluted lens. If the bulb is placed so that one filament is below the focus, as in *b*, and the other above, as in *c*, the angle of tilt is so much affected by variations in bulbs and socket assemblies, that a vertical bulb adjustment is required. The addition of such an adjustment obviously complicates focusing and aiming. This difficulty is also present with headlamps having vertically fluted reflectors.

Lenses with Light Bending Prisms

In many headlamps in use at present reflectors with modified surfaces or lenses with light bending prisms are employed. These can be made in such a way as to give the most desirable form of controllable beam and still require no provision for vertical adjustment. The reflectors or lenses, or a combination of the two, can be designed so that the desired angle of tilt is obtained even though the socket is offset to bring one of the filaments on the axis of the reflector. Consequently, slight variations in bulb and socket assemblies are not detrimental and no means for vertical adjustment are required. Headlamp equipment of this type is shown diagrammatically in Fig. 5.

It is obvious that these new double filament bulbs cannot be used with the old style lamps, and to make the advantages of the new bulbs available to owners of cars already in service, several lamp makers are planning to place replacement units on the market.

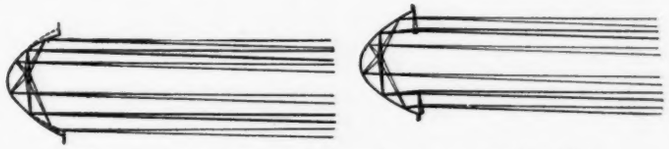


Fig. 5—Headlamps designed to use double filament bulbs

Extensive tests bearing on the best angle between the beams from the upper and lower filaments respectively, have shown that optimum results are obtained with an angle of approximately 2½ deg. The distance between the centers of the two filaments is 9/64 in.

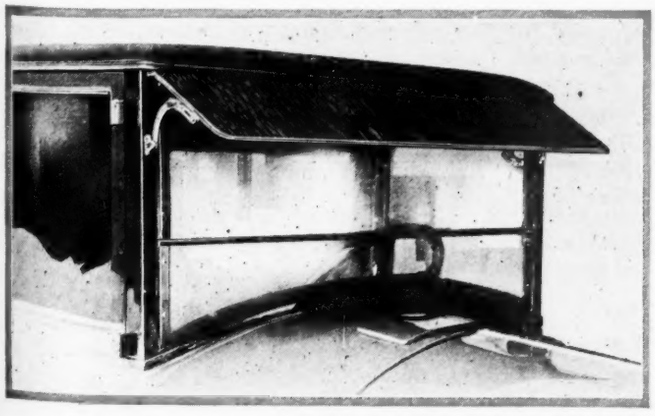
Two New Type Visors Developed by McKinnon Dash Co.

TWO new types of visor have been introduced by the McKinnon Dash Co., of Buffalo, N. Y. These visors, which are standard equipment on three high-priced cars, are both of the fabric type, and are designated as the Celotex Core visor and the Upholstered visor.

The body portion or core of the first mentioned visor is made of a single piece of Celotex, the main ingredient of which is sugar cane fiber. This material is said to be light in weight, waterproof and durable, and to have a low coefficient of expansion. After the Celotex core is cut to shape and size, a solid section of cold-rolled steel U molding is fitted around the body portion. This molding acts as a reinforcing member, and is so fitted that its outer flanges are flush with the face of the material. Steel lugs are inserted between the molding flange at the points of bracket attachment and then spot-welded in position. This provides a solid stock into which to set the bracket screws.

Art Leather Covering Applied

With the core and molding assembled, a complete covering of heavy, black grained art leather is applied and the edges are bound. For additional protection against the weather and for holding the leather taut, a waterproof cement coating is applied to the body member. This leather covering, in addition to having the same finish as the deck material of the car, is applied so that the grain runs laterally across the face of the visor. Thus the deck and visor coverings are matched to give a uniform appearance to the assembled unit. A dull finish on the under side of the visor of the leather protects the operator against glare. Attachment of the visor to the deck overhang is achieved by means of a skirt or flap of the covering at the back.



Upholstered type visor. Art leather used in construction

Celotex Core visor. Sectioned view shows how steel reinforcing is applied

The frame of the Upholstered visor is made of oval section steel, of sufficient gage to give the needed rigidity. The component parts of the frame are spot-welded together. Oval-shaped steel is used in preference to the commonly employed bar steel because it gives the desired thinness.

With the frame assembled and a series of felt paddings inserted in the panel openings to produce a strong core, holes for the bracket and flap attachment are drilled in the frame. This prevents any marring of the leather in attaching the visor.

The art leather covering is applied and bound in the same way as in the other model. With this visor, however, a metal strip is incorporated in the flap extension for attachment to the deck overhand.

These visors can be made with straight or tapered edges to conform to the body lines of the car. It is claimed that the construction is such that no rattle will be caused by car vibration. As a protection against corrosion, all metal parts of these visors are enameled before assembly.

A section of the course over which the French Grand Prix was run, with Robert Benoist, winner, in the foreground

Supercharged Cars Take All Honors in French Grand Prix

Bugattis, without superchargers, crowded into tail-end positions. Relatively few mechanical failures. Ascari's death mars contest.

By W. F. Bradley

SUPERCHARGED cars took all honors in this year's French Grand Prix of 621 miles—which was run over the new Montlhery track, near Paris, Sunday, July 26, with Robert Benoist winning in a 12-cylinder Delage (French) at an average speed of 69.7 miles an hour.

Relatively few mechanical failures developed during the race, only three cars being taken out on this account. These were Segrave's Sunbeam, with a broken inlet valve; Conelli's Sunbeam, with a broken servo brake, and Divo's Delage, with one of its two superchargers inoperative. Fourteen cars started.

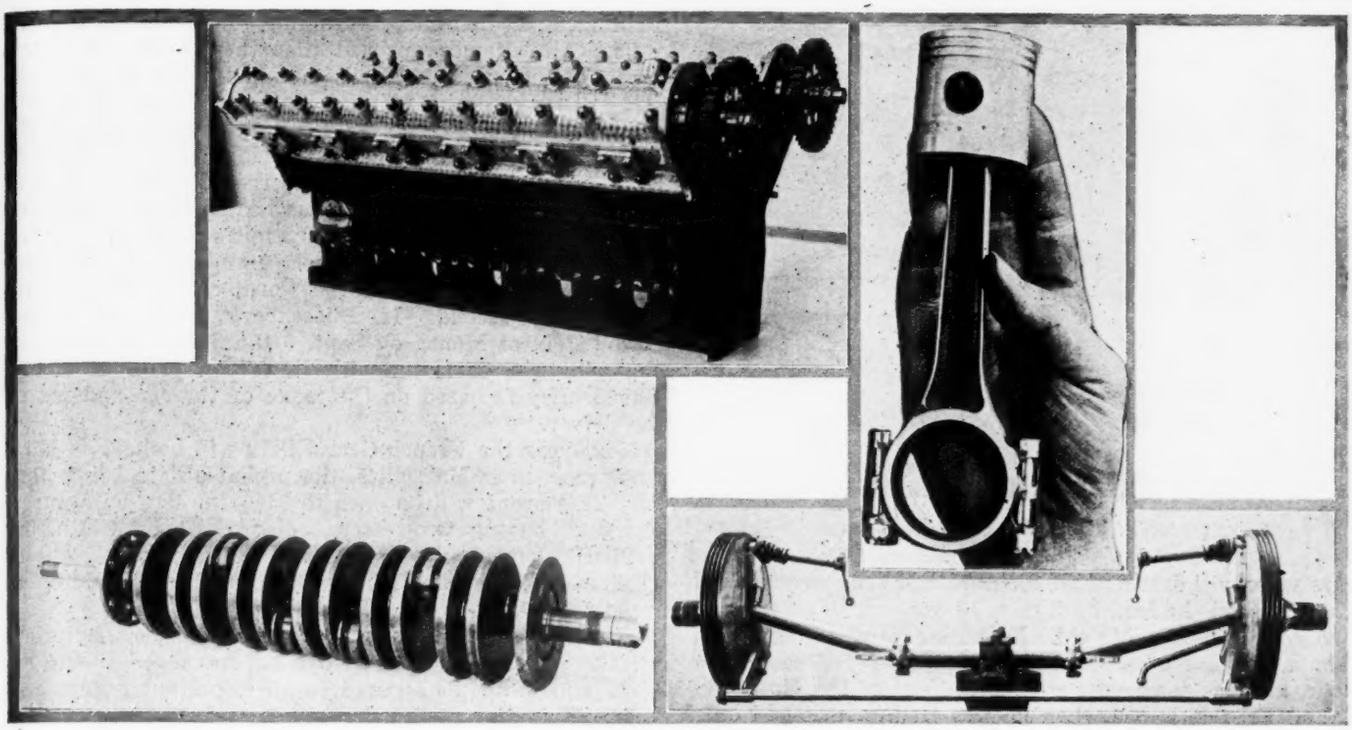
The Bugattis were the only machines to run without superchargers. They were at least 12 miles an hour slower than the Alfa Romeos and the Delages, but they developed no trouble and ran with great regularity. Rain toward the end of the race made the task easier for the slower cars.

This being the last big French race for 122 cubic inch cars, there was little change of design compared with a year ago. The Sunbeam and Alfa Romeo, both being designed by ex-Fiat engineers, had a certain similarity, the former with six and the latter with eight cylinders. Sunbeam made use of a single Solex carbureter, through which the mixture was drawn by a Rootes' blower running at engine speed. Gasoline with 40 per cent benzol was the fuel used.

The Alfa Romeos had two Memini carbureters, with the intake manifolds united by a balancing by-pass. The Rootes' type blower was not driven direct off the crankshaft, but through an intermediate pinion and the design provided for two different ratios. In this event the blower was geared up slightly in relation to the engine, giving 6000 revolutions of the blower for 5000 revolutions of the engine. The air was forced through the carbureters, but before entering them it passed through a cast aluminum cooling chamber bolted to the side of the base chamber. The two overhead camshafts were driven from the rear end by a train of spur pinions and the air from the crankcase breather at the forward end of the engine was led into the blower.

Delage Has 12 Cylinders

The winning Delage was the most distinctive of the competing cars in having 12-cylinders in V, the engine being treated as a double six, with the two blocks of cylinders staggered in relation to one another to allow of the connecting rods being mounted side by side on one



Above are views of the 12-cylinder Delage racing engine, one of the connecting rods and pistons, the crankshaft and the front axle assembly

crankpin. A seven bearing circular web crankshaft was used. Rollers were employed for the crankshaft and the connecting rods, and the twenty-two pinions in the timing gear housing were mounted on ball bearings. A separate Rootes blower was used for each set of cylinders. The mixture was drawn through a Zenith carbureter and delivered to the cylinders through a perfectly straight intake manifold.

Unlike the Alfa Romeos and Sunbeams, the Delages had cast iron cylinders.

All the cars exceeded the minimum of 1433 pounds. The Alfa Romeos scaled 1760 pounds, the Sunbeams 1800, the Delages about the same and the Bugattis 1630 pounds. Some gasoline and all the oil is included in these figures.

Bugatti ran with cast aluminum wheels of his own invention, having the Rudge Whitworth system of mounting. Both the Bugattis and the Delages ran on clincher bead tires with the Michelin continuous safety lug. The Alfa Romeos used straight sides and Pirelli balloons. There was no tire trouble during the race, only precautionary changes being made.

All cars were equipped with mechanically operated four wheel brakes, and although there were six difficult turns on the 7.7 miles circuit, there was only one case of brake failure or adjustment.

Considering that 500 miles were insufficient to test men and machines, the Automobile Club of France this year increased the distance to 621 miles. This only fatigued the public without being any greater test for the cars, for all machines in at 500 miles went through to the end.

The race was marred by an accident which cost the life of the great Italian driver, Antonio Ascari. Ascari, on a straight-eight supercharged Alfa Romeo, set the pace and led the field for 169 miles, his average for this distance, including one stop for gas and a change of tires, being 76.2 miles an hour. During the twenty-third lap, while holding a lead of 2 min. 42 sec. on his companion Campari, and 4 min. 37 sec. over a Delage which was third, he overturned and died two hours later.

The accident happened on a long, easy left-hand bend, which the car was taking at nearly 120 miles an hour. Light garden fencing had been placed on the inside of the bend. Ascari took the corner so close that he flicked the fencing twice with his left rear hub cap, then in trying to straighten out began to scoop up the fencing between his left front wheel and his frame member. The car turned over twice, finally settling on its wheels with steering and tires intact. It is now realized that light fencing around the course served no useful purpose and was a danger to the drivers.

After the death of Ascari the two other Alfa Romeo

Facts About the Race

EIGHT cars finished the French Grand Prix. Benoist was first in his 12-cylinder supercharged Delage. Louis Wagner was second on a similar car, 7 min. 46 sec. behind the winner. Count Masetti was third on a six-cylinder supercharged Sunbeam, and five straight-eight non-supercharged Bugattis took the following positions, the order of the drivers being Constantini, Jules Goux, Fernand de Vizcaya, Pierre de Vizcaya and Foresti.

The winner received $7,500 cash, the second man took $1,500 and the third man $1,000.

The race was held on the new Montlhéry track and specially constructed road circuit measuring 7.7 miles round, in which a capital of $2,500,000 is involved, but owing to defective organization the attendance was poor and the gate receipts did not exceed $39,000.

Start of the Grand Prix at Montlhery

cars were withdrawn; half distance had been covered and Campari had the lead by 2 min. 13 sec.

Ascari was 36 years old. Last year he won the Italian Grand Prix at Monza, at an average of 98.7 miles an hour, and the same year was forced out of the European Grand Prix at Lyons when he was leading and had only one lap to go. Last June he won the European Grand Prix at Spa, Belgium, averaging 74.46 miles per hour.

The Alfa Romeos proved that they were the fastest cars in the race, Ascari's maximum speed over the straightaway being 134 miles an hour. Campari, on the second Alfa Romeo, showed 132.2 miles an hour, and the fastest other car was Benoist's Delage at 131.4 miles an hour. Ascari set up the first lap record at an average of 80.1 miles an hour, but this was beaten later by Divo on a Delage with an average of 80.3 miles an hour.

As the result of this race Delage and Alfa Romeo were placed on an equality for the world championship, with Duesenberg second. If Duesenberg wins the Italian Grand Prix at Monza on Sept. 6 the firm will secure the championship, carrying with it a cash prize of $5,000. This trophy is based on the make of the car and not on the driver.

Next year the French Grand Prix will be held at Miramas track, near Marseilles, the probable date being June 28. This event will be open to 91½ in. cars with superchargers, having two-seater bodies of 31 in. width, but with the driver only aboard, and a minimum weight of 1543 lb. These rules will apply to all the big European races.

It is reported that the Fiat and Delage companies are working on 91½ in. two-stroke supercharged racing engines which will be entered in all important events next year. The Fiat racing department refuses to make any statement regarding its plans.

Suggestions Are Advanced for Varnish Tests

A PAPER on Tests for Hardness, Gloss, Color and Leveling of Varnishes was presented at the annual meeting of the American Society for Testing Materials by A. H. Pfund, Associate Professor of Physics at Johns Hopkins University, Baltimore. Professor Pfund states that at the present time there is no general agreement in the varnish industry as to the character of the tests and a comparison of numerical data obtained in different plants is impossible. In the paper there is described some experimental work carried out at the experimental station of the E. I. duPont de Nemours Co. with a view to developing tests for varnish that should be as free as possible of the element of personal judgment.

For hardness tests a modified Brinell method was developed. Briefly the method consists in measuring the diameter of the circle of contact between the varnish and a small sphere while the two are still in contact. A small sphere about 2 mm. in diameter is forced into the varnish film. Measurements are taken with a micrometer eyepiece and a microscope supplied with a special illuminating device. The scale of hardness is made proportional to the load necessary to produce a circle of constant diameter. Varnishes of decreasing oil-length reveal an increasing hardness.

It is found necessary to cover the great range of glosses on two scales:

1. Normal Gloss Scale—This scale covers the range from highest glosses to "flat" surfaces. The instrument measures the intensity of the specularly reflected light. It is particularly applicable to the study of loss of gloss due to weathering.

2. High Gloss Scale—Covering the narrow range of variations exhibited by surfaces of very high luster.

Because of the fact that colored glasses, as a class, are more nearly permanent than colored solutions, as a class, a color comparator, involving the use of a wedge of amber glass, was developed. In order to cover the wide range in color and transparency displayed by varnishes it was found necessary to use also a hollow wedge, to be filled with varnish, in conjunction with the amber wedge. The two wedges are reversed with respect to one another and are mounted on the same slide behind a fixed vertical slit. Readings are taken by moving the slide until the colors of the two wedges, as seen through the narrow slit, are the same. The Gardner-Holdt color scale is retained.

The leveling instrument gives information concerning the time interval which may elapse between the application of a varnish and the development of brush marks. So as to simulate the rapid motion of a brush, an arm, bearing three weighted needles whose points pass through the varnish film to the underlying glass plate, is swept across the surface rapidly. The plate is then displaced and at intervals of five minutes the rapid motion of the arm is reversed. Failure to level is detected by noting the appearance of faint undulations on the surface.

THE "Comité Scientifique de Pétrole" at Paris, France, is organizing a test of trucks to take place Sept. 15, 1925. All the machines entered will be required to use charcoal, coke or mixtures of same as fuel. Neither gasoline nor oil can be employed as fuel, except to start the engines.

The National Office of Combustible Liquids, the National Office of Research and Inventions, the Automobile Club of France and the Ministry of War will cooperate in holding the test. The tests are scheduled to take place somewhere in the north of France and will probably be over a distance of about 2000 kilometers. Entries are being received by the Automobile Club of France, 6 Place de la Concorde, Paris.

Owing to the fact that the tests are being held primarily for the purpose of developing apparatus using fuel other than gasoline and oil, entries are expected to be confined to machines manufactured in France. It is possible, however, that machines manufactured in Belgium may also be granted the right to compete.

Just Among Ourselves

Gasoline Breathing Losses Stopped—What Next?

THE scientists now have begun to eliminate the waste even in breathing. The end of efficiency is not yet awhile. To be sure it is "breathing losses" of gasoline that are being reduced to nothing, but there's no limit to which the idea might be carried. Standard Oil of Indiana has developed a balloon which captures the gas escaping from gasoline in tanks during the day and which gives it back to the tank at night. The gas has to be permitted to escape through vents to prevent undue pressure from within which might destroy the tank. Perhaps the automobile of the future will run about with a battery of balloons flying over its gasoline tank. And what with the high cost of real stuff in this country, it's plausible to assume that the idea might be applied to the boys in the back room after they have finished their liquid conferences. By capturing the breaths that now go to waste, the supply of liquor might be materially increased—to say nothing of the benefits which would accrue to vendors of toy balloons so inflated.

Price Cuts—Past and Present

THE open season for price cutting is pretty nearly over for this fall. Decreases have been recorded by practically all of the important cars in competitive lines, although one or two outstanding exceptions still are holding firm as this is written. The psychology of automobile price cuts is interesting to follow from year to year because different factors enter into nearly every general price revision. Four years ago there was a strong tendency in some parts of the industry for quite a while to hold prices up, despite the materially decreased demand which came along in 1921. Looking back on those months as history, it seems obvious that the cuts had to be made at that time; that they were demanded by fundamental economic conditions. The war was over; deflation was in order. Prices had to come down. Still we can remember having had the greatest difficulty in supporting that side of the case; for several months it was strongly argued in some quarters that prices should be maintained or the dealers wouldn't have enough margin to do business on and the manufacturers couldn't make any money. But the dominant thought in the industry swung toward lower prices. Losses had to be sustained some time, and, with characteristic courage, the automobile industry decided to take its licking all at once and clear the decks for future progress. Subsequent events proved the wisdom of that course.

Looking Backward at Price Revisions

FIVE or six price flurries have taken place since that time. The New York Show in 1922 was so dominated by the widespread and determined emphasis on prices that selling was made very difficult. The era of intense competition had started and the industry came nearer to what properly might be called a price war than ever before or since. But the folly of making price the only sales point became apparent within a week. Price was soft-pedalled at the Chicago Show and more fundamental selling arguments were brought back to their proper position in the merchandising scheme. Since that time jockeying for competitive advantage has been one of the chief immediate causes of nearly every general revision of prices in the industry. Production costs actually have been reduced materially in the last few years, but competitive considerations often have dictated cuts much larger than warranted by cost reduction alone. One or two companies usually started the ball rolling, got a jump on the field and then the others came through to meet the competition.

Ringleaders Change Frequently

THE company or companies which have been instrumental in starting the various price scale revisions have varied from time to time. No single organization has dominated the field to such an extent as to make it a law unto itself which would compel others to follow. Ford, of course, was the leader in several of the downward price revisions, Hudson played the leading part on several occasions, while General Motors Corp. may be said to have been a chief factor in the current downward trend. Through all the price revisions of past years, relatively little attention has been paid to the timeliness of decreases from a general merchandising standpoint. Cuts have been made more than once in the midst of a selling season when they tended to retard rather than stimulate sales. But this year all that was changed. The manufacturers held fast throughout the brisk selling season and now are reaping the benefit of stimulated sales during a period when, ordinarily, sales fall off materially. Every year the automobile industry is handling its marketing problems and its merchandising policies more efficiently and more effectively. —N. G. S.

Mercedes Oiling System a Departure from Conventional Practice

Small supply of fresh lubricant constantly fed into pressure pump during engine operation. Oil delivered to one bearing at a time with special distributor.

WHILE a general description of the new Mercedes model appeared in *Automotive Industries* of Nov. 13, 1924, we are now able to furnish additional details which have been supplied by our Berlin correspondent.

Some of the most interesting features of the new car, which could not be fully described in the previous article, are treated here in detail.

AN oiling system which lubricates each bearing separately and provides a means of adding fresh oil to the crankcase at a constant rate per revolution is included among the features of the present Mercedes model.

Details of the oiling system are shown in several of the line cuts. Referring to Fig. 1, oil is forced to the various bearings by the gear pump *Z* arranged in the lower part of the crankcase and driven from the vertical shaft *S* at the rear of the engine through a worm and worm wheel. The worm gear shaft also carries the fresh oil pump *O* with a differential plunger *d*. It will be noticed that the plunger is located inside an eccentric housing, which causes it to reciprocate in relation to its barrel. While the plunger moves out, increasing the space within the barrel, the latter is in communication with the fresh oil supply tank *F*, whereas when the plunger moves in and the space in the barrel is thereby decreased, the latter communicates with the inlet to the pressure pump. Both pumps are positive, and therefore a certain proportion of fresh oil is added to that in circulation at each revolution of the

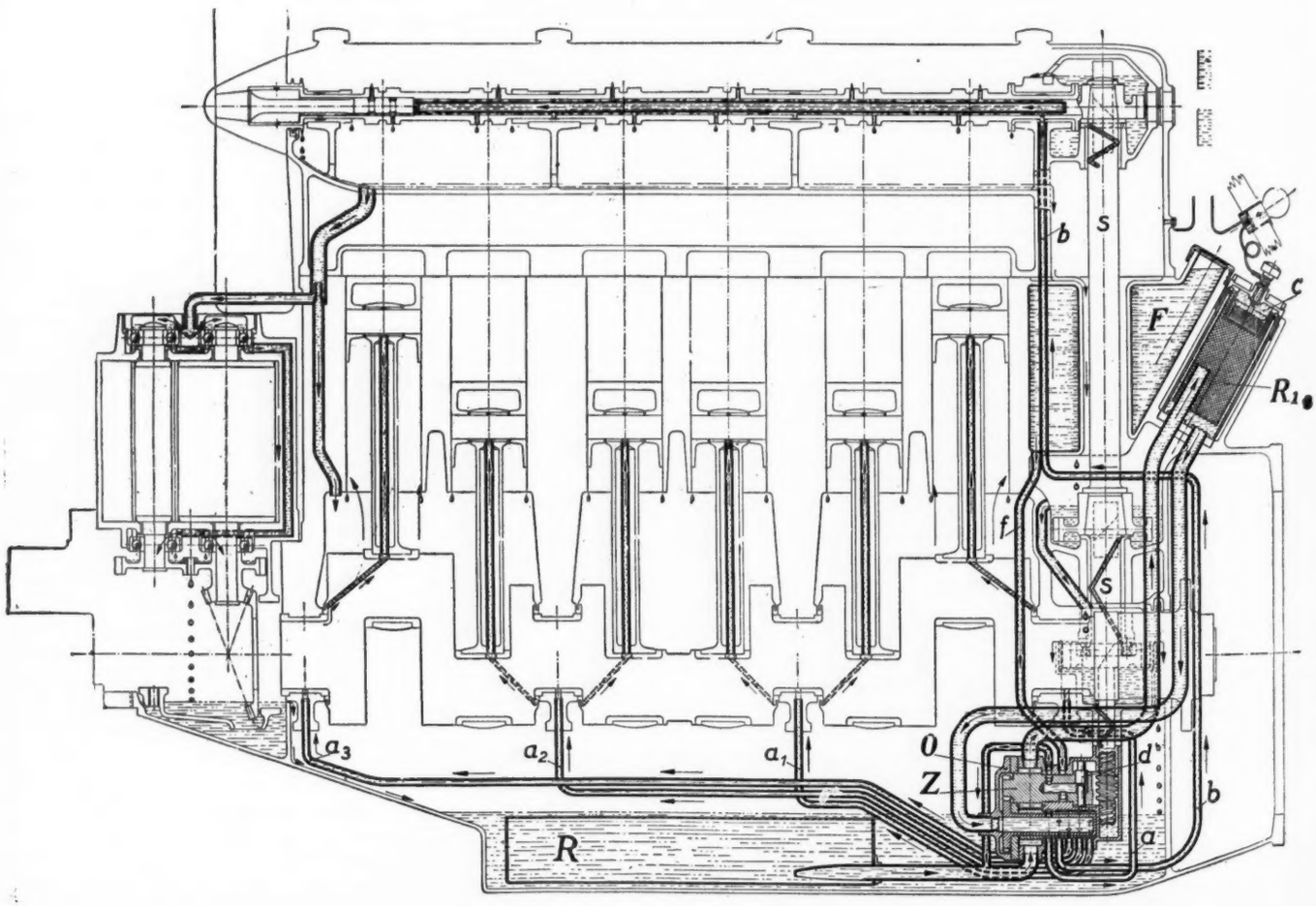


Fig. 1—Engine lubrication diagram

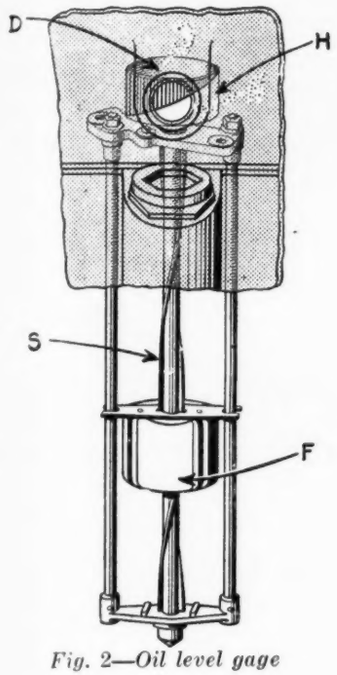


Fig. 2—Oil level gage

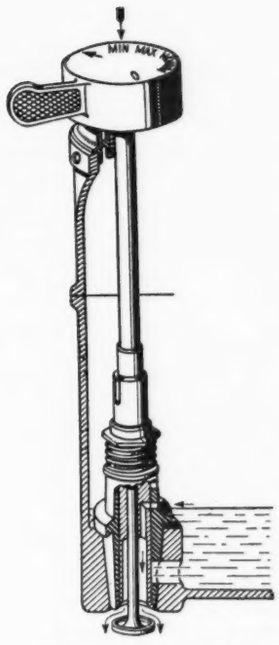


Fig. 3—Oil gaging, controlling and draining device

worm gear. The pressure pump draws its supply of oil from the large strainer *R* in the crankcase.

A feature which distinguishes the Mercedes from most other pressure lubricating systems is that it comprises a distributor which ensures positive delivery of oil to each bearing, irrespective of the condition of the other bearings. This distributor is formed by the hollow driven shaft of the gear pump.

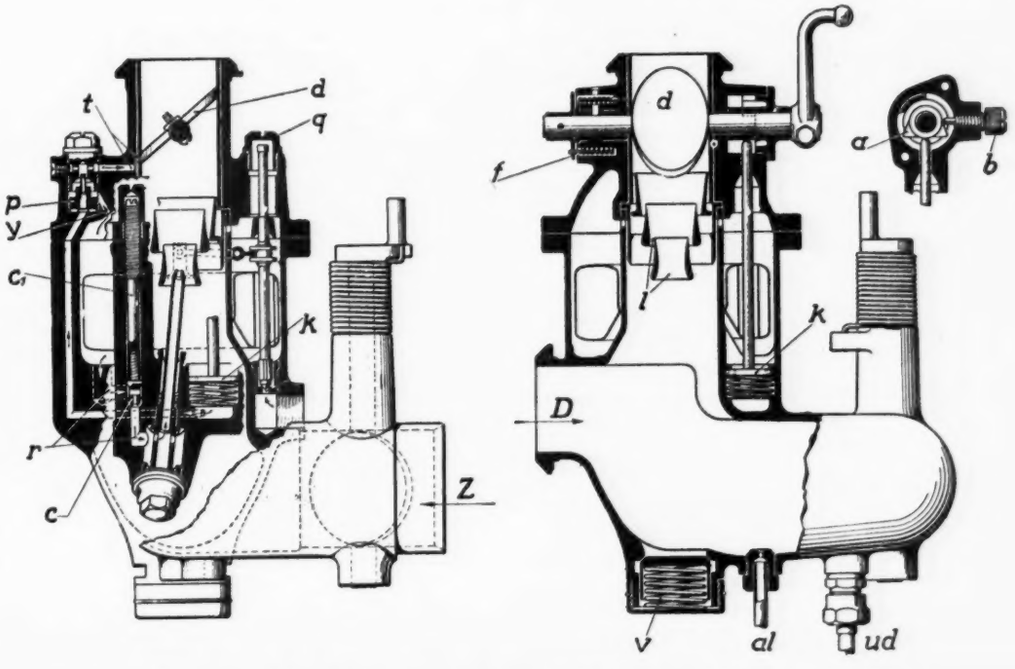
At every revolution of the worm gear a certain small quantity of fresh oil is taken in by the plunger type fresh oil pump and is forced by it through the tube *f* to the inlet of the pressure pump. The mixture of fresh and old oil is then forced by the pressure pump to the strainer R_1, located in the right rear arm of the crankcase, when it passes to the distributor, that is, the hollow driven shaft of the gear pump. The driven gear of the gear pump is provided with a long hub on one side and, since this gear and the hollow shaft run at different speeds, there is relative motion between them which brings ports in the hub and the shaft into registry successively and allows the oil to pass out to the points to be lubricated. Thus, at any one time oil is being delivered only to one bearing, but the delivery is switched in quick succession from one bearing to the next.

Oil pump *O* is located directly below crankshaft bearing No. 4, the cap of this bearing also forming the cover of the pump. Oil is fed to this bearing through tube *a*. A second tube *b* leads to the rear bearing of the overhead camshaft. The remaining leads a_1, a_2, a_3, proceed from the side flange of the oil pump to the other main bearings of the crank. The oil which works through the main bearings is caught in oil retainer rings on the crank arms and is delivered by centrifugal force to the crankpin bearings. Oil passes through the drill holes in the connecting rods to the piston pin bearings. The cylinder walls are lubricated by the oil spray. The oil delivered to the hollow camshaft lubricates all of the four bearings of that shaft as well as the cams and then collects in the trough of the camshaft housing, thus lubricating the pivots of the valve rockers and the valve stems. The surplus oil in the camshaft housing returns to the crankshaft through a tube at the front of the engine, from which a branch is taken off to lubricate the bearings of the supercharger. The bearings of the vertical shaft *S* at the rear end of the engine are also oiled from the supply collecting in the trough.

Oil Heated from Engine

The fresh oil supply tank is located at the rear of the cylinder block surrounding the vertical shaft, so that the oil is heated from the engine in cold weather and flows to the fresh oil pump by gravity. There is an inclined filler on the oil tank at the side of the engine and the tank also contains a gage of which an illustration is shown in Fig. 2. This gage comprises a float constrained by two guide rods to move up and down without rotation. A rod with helical splines passes centrally through the float and its guide plate, which latter has corresponding keyways. At the upper end the central rod carries a drum, the cylindrical surface of which is divided in halves along a helical line, one half being painted white and the other red. As the oil level rises and falls this drum rotates and a portion of its surface shows behind a bullseye. When the tank is empty only red shows behind the bullseye, whereas when it is full only white shows. Under all conditions the ratio of white to the total field is an approximate measure of the amount of oil in the tank.

At the carbureter side of the crankcase near the center is mounted the combined oil gage and drain cock (Fig. 3), the operating lever of which is just underneath the ribbed pipe from the supercharger to the carbureter. This cock has five different positions, indicated by marks on the hub



Figs. 4 and 5—Two sectional views of Mercedes triple venturi carbureter

of the lever and an arrow cast on the cylinder block. Normally the lever is in position 1, in which the cock is closed. When it is desired to replenish the oil supply in the crankcase the lever is turned to the position indicated by "Max." A port in the gage cock stem is then brought into registry with a port in the guide plug at a height corresponding to the maximum oil level desirable and at the same time a poppet valve at the bottom of the gage is forced off its seat, so that as soon as the oil in the crankcase reaches the maximum desired level it drains off. There is another lower port in the guide plug which corresponds to the lowest permissible oil level, and a corresponding passage in the stem of the gage cock. If the lever is turned to the "Min." position and no oil flows from the cock it is a sign that the oil level is too low. If the lever is turned to the position marked *O* a drain port in the cock comes opposite the drain port in a boss on the oil well and the entire supply may be drained off. The fifth position of the gage cock is indicated by an arrowhead on the hub of the lever. When this is opposite the arrow on the cylinder block the whole gage cock may be removed upwardly for cleaning purposes.

Circulation Indicator

A circulation indicator is provided in connection with the oil strainer in the pressure line of the oil pump. In the upper part of this strainer body (Fig. 1) there is a pressure contact device and if the pressure on the oil drops materially below normal an electric contact is established which lights up a blue bulb on the instrument board.

The car is equipped with an aluminum overhead camshaft engine, and one of the drawings herewith shows the method of operating the valves from the overhead camshaft through single-armed levers. Each valve carries two springs. An adjusting screw is fitted in the free end of the rocker valve and is locked in position by a clamp screw.

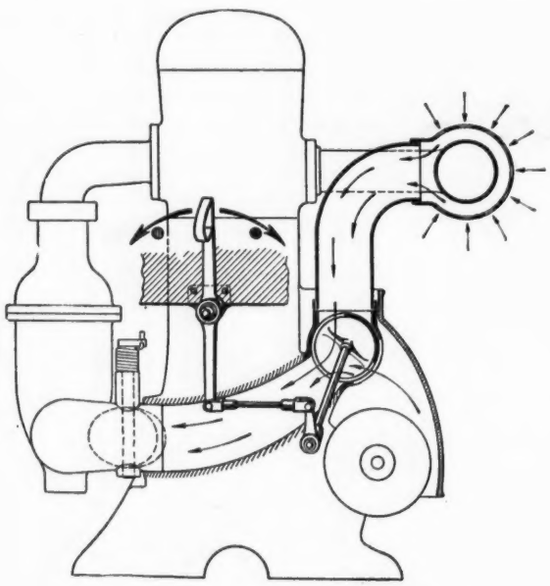
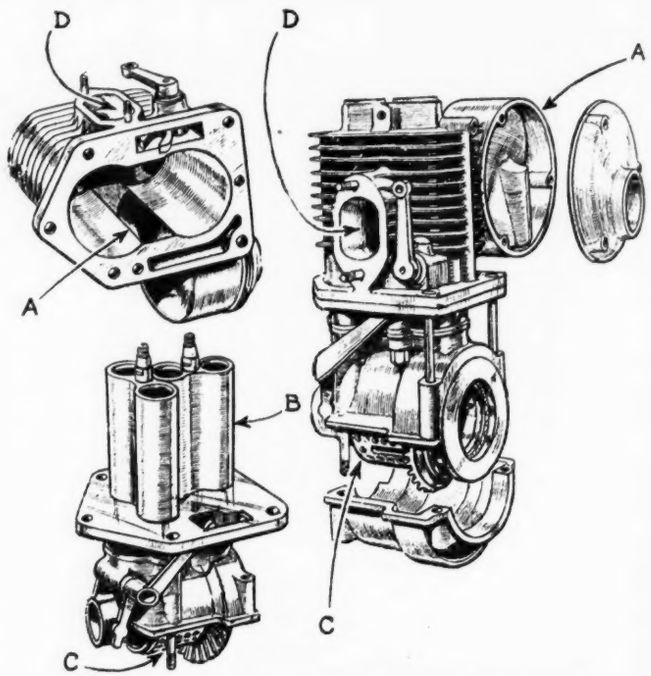


Fig. 6—Showing air passage to carbureter through upper part of crankcase

The piston is an aluminum casting chill-cast onto a cast iron skirt, the small light circles showing on the upper side in the photograph in Plate I indicating where the aluminum has penetrated through holes drilled in the skirt in order to assure a secure joint between the two metals. The connecting rod is of nearly solid round section, being drilled with a small hole through the shank to carry the oil to the piston pin bearing, which latter has a cast iron bushing—an unusual feature.

A carbureter of Mercedes design is used, of the triple venturi type. Two sections of this device are shown in Figs. 4 and 5. There are two unusual features connected with the butterfly type throttle valve *d*. One resides in the fact that the spring *f*, which tends to hold the throttle



Figs. 7 and 8—Mercedes supercharger assembled and in parts

closed, is enclosed within a housing surrounding one bearing of the throttle shaft, while a stop *a* is enclosed in a similar housing on the other side. This stop, which is in the form of a sharp-nosed cam, in conjunction with the adjusting screw *b* determines the idling position of the throttle. An idling nozzle *t* discharges opposite the edge of the throttle disk.

The float is of the concentric type and the float valve extends through a vertical tube inserted in the float, and is operated from the latter through the float lever *g*. Fuel delivered by the main nozzle *h* is metered by the calibrated metering nozzle *c* carried by the nozzle holder c_1. The operation of the carbureter is as follows:

Operation Without Supercharger

When the engine is operating without the supercharger both the throttle valve *d* and the choke valve *Z* are open and air, which is heated according to the position of the hot air valve in the exhaust jacket, is drawn in through the venturis *l*. At the same time fuel enters the well at the bottom of the spray nozzle *h* through the calibrated metering orifice *c*. Therefore in this case the metering orifice is not at the top of the spray nozzle but in a channels connecting the float chamber with the nozzle screw. One advantage of this arrangement is that it is possible to remove the metering screw from the carbureter without wasting any gasoline. The fuel is sprayed into the smallest of the three venturis, where a rich mixture is formed which is diluted by the supplementary air entering through the other venturis.

If the air speed through the carbureter attains a considerable value, the largest of the three venturis, which is arranged so as to be free to move up and down, is raised

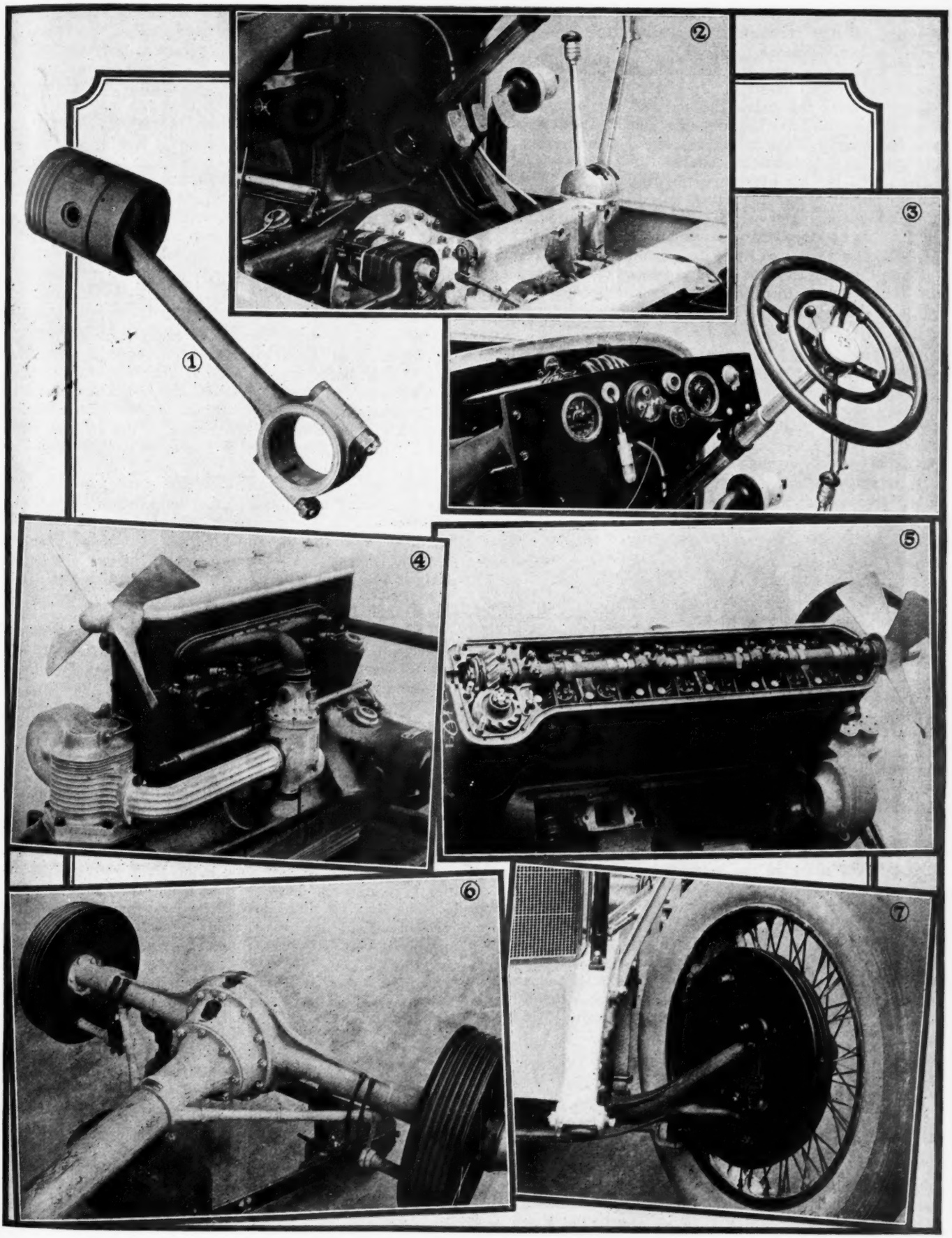


Plate 1—Composite aluminum and cast iron piston with round section connecting rod. 2—Control members, including the carbureter temperature control lever on the dashboard and the foot button for the muffler cut-out. 3—Steering wheel and instrument board, showing trouble light with self-reeling cable. 4—Left view of engine showing carbureter and supercharger. 5—Top view of engine with cover removed exposing valve mechanism. 6—Rear axle with double rear wheel brakes. 7—Front axle and front wheel brakes

by the suction of the engine, thus increasing the area of the air passage through it and correcting the mixture ratio for high suctions.

The float valve is readily accessible through the opening closed by the cap screw *q*. In order to be able to completely remove the valve the part *o* of the carbureter housing and the intermediary ring must be removed first. The space around the idling nozzle *p* communicates with the upper part of the float chamber through three inclined holes *y* and the air necessary for atomizing the starting fuel is drawn in through these holes.

Before starting the engine the carbureter can be primed by pushing the accelerator pedal down a number of times. The effect of this is to work the gasoline pump *k* through the cam *a* on the throttle shaft and force gasoline through the idling nozzle into the mixing chamber of the carbureter above the throttle. Any fuel collecting at the bottom of the carbureter is drained off through the drain pipe *al*.

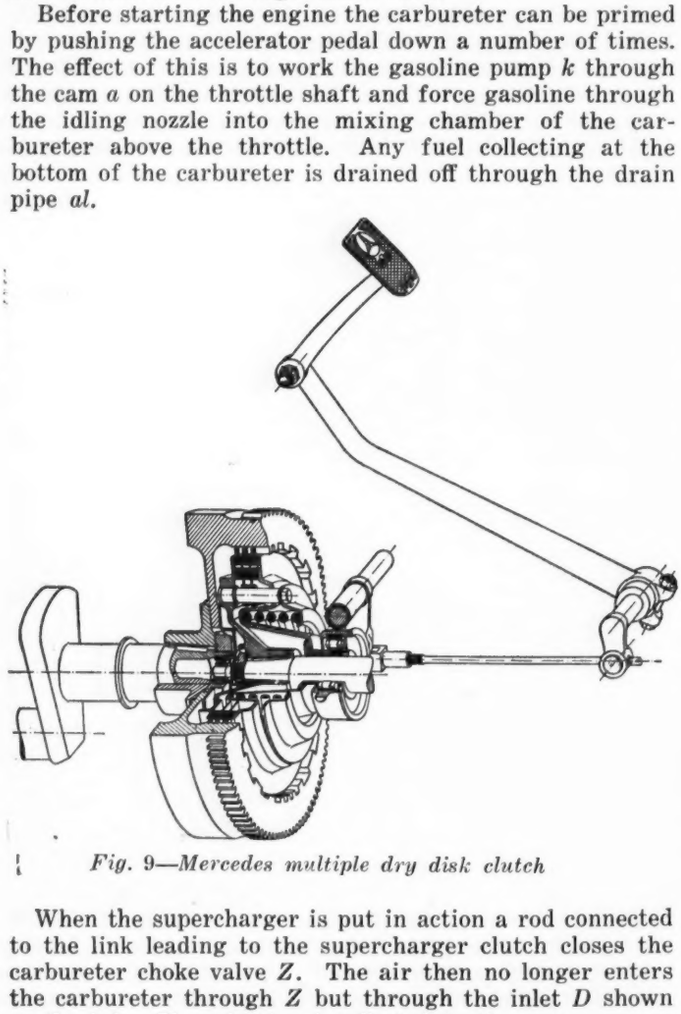


Fig. 9—Mercedes multiple dry disk clutch

When the supercharger is put in action a rod connected to the link leading to the supercharger clutch closes the carbureter choke valve *Z*. The air then no longer enters the carbureter through *Z* but through the inlet *D* shown at the left. Vaporization is effected in the same way as without supercharger. At the same time the supercharger begins to work the vacuum fuel feed ceases and the overpressure in the carbureter is now communicated to the fuel tank through the small tube *nd*, which provides for pressure feed. In order to prevent excessive pressures to be generated in the carbureter in the event of a carbureter explosion the relief valve *v* is provided.

Air Passage in Crankcase

When the engine runs without the supercharger the air flows to the carbureter through a passage through the upper part of the crankcase (Fig. 6). This passage originates at the hot air muff surrounding the exhaust manifold, and contains a valve directly beneath the exhaust manifold by means of which the proportion of hot to cold air taken in can be varied. The hot and cold air valve is controlled by a pedal on the toe-board.

The supercharger, which is mounted at the forward end of the engine, is of the Roots blower type and is shown in parts in two of the figures (7 and 8). The two rotors of the blower, each of figure 8 shape, are mounted on vertical

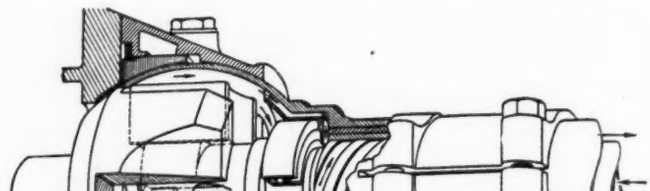


Fig. 10—Universal joint and lubrication system therefor

shafts which at their lower ends carry spur gears meshing together, so that the two rotate in opposite directions. One of the shafts carries a bevel gear meshing with the driving bevel on the crankshaft, the speed multiplication being approximately one to three. In the illustration, *A* is the air inlet, *B* one of the rotors, *C* the friction clutch and *D* the air delivery port. The supercharger draws air through the chamber on the right side of the engine containing the magneto, generator and pump, which serves the function of an intake muffler, and delivers it through a ribbed tube to the carbureter. Combined with the multiple disk clutch for the supercharger in the housing *C* is a multiple disk brake which quickly brings the supercharger to a stop after the clutch has been released.

Auxiliary Fuel Tank

With a supercharger the fuel feed presents a special problem, because when it is in action there is no vacuum, but an overpressure in the inlet manifold, and fuel therefore cannot be drawn from the rear tank by suction. On the Mercedes there is a large auxiliary fuel tank on the dashboard, inside of which the vacuum tank is mounted. When the supercharger is thrown in the over-pressure is communicated through a branch line from the supercharger delivery to the auxiliary tank, putting it under pressure; at the same time the vacuum tank is disconnected and gasoline flows by gravity from the auxiliary tank to the carbureter.

After using the cone type of clutch for a great many years, Mercedes in this new model has gone to the dry disk type, and the details of the design are shown in Fig. 9. The driving disks are thickened where they engage the keys of the flywheel rim and likewise the driving lugs on the driven disks are thickened where they pass over the guide studs.

The transmission gear is of the four speed selective type and so arranged that the control lever can be located either

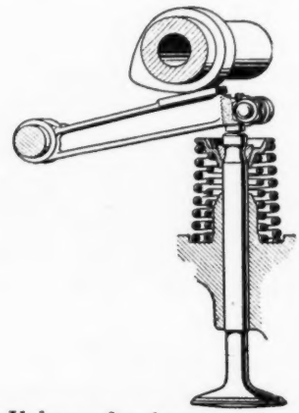


Fig. 11—Valve and valve operating mechanism

at the right or in the center of the car, according to whether right or left hand steering is used.

An interesting method is employed for lubricating the universal joint directly back of the gearbox (Fig. 10). This is of the block and trunnion type, the blocks being of hard bronze. This is the only universal joint used and it is enclosed in a ball housing. Oil for lubricating the joint passes through the hollow propeller shaft from the rear axle housing and through radial holes to the surfaces of the bearings between the blocks and trunnions. Surplus oil returns to the rear axle housing through the space between the propeller shaft and its housing. The forward end of the propeller shaft is provided with a square thread on its outside which forces the oil back to the rear housing, thus setting up a continuous circulation.

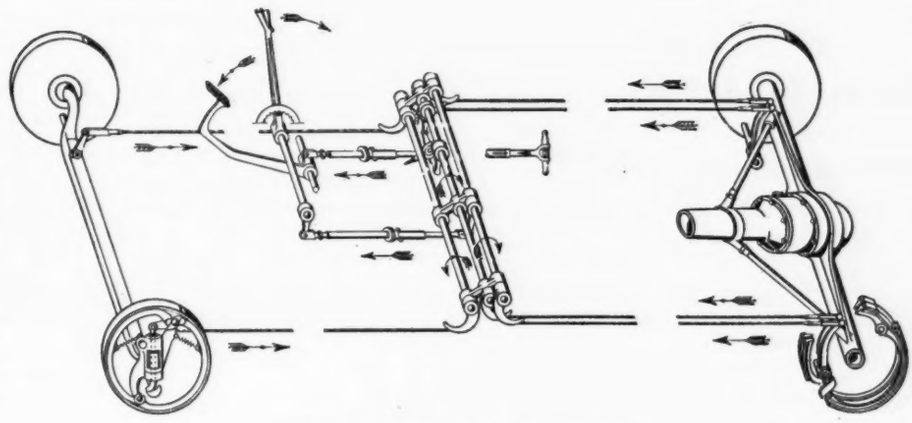


Fig. 12—Brake equalizing system

Mercedes uses four-wheel service brakes fully equalized, and in addition emergency brakes acting on the rear wheels only. The equalizing system for the four-wheel brakes is shown in Fig. 12. The brake pedal connects through a link and the conventional balance lever type of equalizer to the middle one of the three parallel shafts extending across the chassis frame and to a gear sector mounted freely upon same, which meshes with another equal gear sector on the forward shaft. In this manner the force of brake application is divided between the front and rear brakes. These shafts are hollow and the steel cables to the front and rear brakes pass right through them, whereby equalization between the braking pressures at the two sides of the car is effected. The three brake equalizing shafts are completely hidden from view on the bare chassis by a wide cross member of the frame of inverted channel section.

A New Portable Crane for Light Trucks

OF the various types of portable cranes now on the market, the majority are built for use on trucks of 5 tons capacity or over. To meet the demand for a lighter truck-crane combination, the International Motor Company has developed a crane mounted on Mack trucks of 1½, 2 and 2½ tons capacity.

This crane, primarily designed for unloading 1,000-gallon fuel oil tanks from gondola cars, is adaptable to a great many other uses, such as handling gasoline drums, barrels, stone slabs and other materials weighing up to 2500 pounds.

The equipment consists of a mast, braced and anchored to the chassis frame, a special drum-winch and two booms, the longer of which is shown in the accompanying illustration.

Hoisting a 1500-lb. fuel oil tank by means of a portable crane

The long boom measures 13 ft. 3½ in., and has a 16-ft. clearance from the ground, while the short boom, measuring 8 ft.-11½ in., has a 10-ft. ground clearance. Both booms have an 8½-ft. lateral radius, and since the shorter one may be operated with the mast in a lowered position, it is used for general lifting, but where additional clearance is required, as in hoisting from freight cars, etc., the long boom is necessary.

Power is applied to the winch from a power take-off through a one-speed forward and reverse gear and a chain drive to the winch worm-sprocket. The controls, consisting of motor-clutch and gear shift, are located directly behind the cab, on the left side of the mast, and attached to the back side of the cab is an auxiliary gas control which permits the operator to regulate the engine speed without leaving his position at the control levers.

To insure rigidity of the chassis while the crane is being operated, two jack screws support the mast from the ground. These screws are attached to the cross members under the mast by means of a swivel arrangement, so that when not in use, the free ends may be fastened to brackets on the sides of the frame. The crane assembly may be mounted on any standard Mack truck with but little alteration to the body and none to the cab.

DURING 1924 no less than 279 agricultural tractors were imported into Egypt, as compared with only 24 during the previous year. The demand for tractors is growing rapidly, especially because of the very favorable harvest and the high prices obtained for agricultural products. Most of the tractors imported were of American and British origin.

THE FORUM

Big Field Abroad Seen for American-Built Light Car

Editor, AUTOMOTIVE INDUSTRIES:

I have read with interest your article entitled "Europe has Taken to the Light Car—Could a Field Be Developed for it in America?", which appeared in your issue of July 9.

This article is extremely interesting and should cause the large American manufacturers to ponder the question, of which they have been thinking already. In fact, I believe that some of them have under development an engine of very small piston displacement.

You say the American wants power. This is true, because you have not given him so far a light car of 8-10 h.p. adapted to the American taste, and when a manufacturer offers the American public a vehicle of this type he will meet with great success.

For many years I have tried to convince American manufacturers that there is great need for bringing out a car of small piston displacement. Following is a copy of a letter which I wrote to one of our friends in America in order to impress him with the advantage there would be in manufacturing a small car:

"Dear Sir:

"I cannot understand why it is that there is not a single American maker who manufactures a small car with a four or six cylinder engine with a bore of 2½ in. and a stroke of 4 or 4½ in.

"The American factory which brings out such a vehicle is sure of a formidable success in the foreign market and, contrary to what most American manufacturers think of the plan, I think it is worth the trouble.

"In my estimation, the American manufacturer who brings out a light car of 8-10 h.p. could easily sell each year:—

4,000 cars in Belgium;
30,000-35,000 cars in England;
15,000-20,000 cars in France;
10,000-15,000 cars in Spain;
2,000 cars in Switzerland;
3,000 cars in Holland;
15,000 cars in Germany;
15,000 cars in the Scandinavian countries.

"The above figures are conservative, as I maintain that a manufacturer could build such a car to sell at approximately $500. At that price it would not meet with any competition in Europe.

"You are familiar with the success of the Citroen 5 and 10 h.p.; the Renault 5 and 10 h.p.; and the Fiat 10 h.p. which latter firm is to bring out a new 7 h.p. All of these cars are sold at prices between 18,000 and 30,000 francs, while an American car of the same displacement could be sold in Belgium at between 16,000 and 20,000 francs.

"See what enormous advantages there would be, as at present it is thoroughly understood in Europe that American products compete advantageously with European products whatever the make, and at the same price there is nothing in Europe which compares with the American car.

"When you consider that the Ford car sells in Belgium at present for 10,615 francs, that the little 10 h.p. Citroen sells at 21,000 francs and that in spite of its high price it still has an enormous success, you will understand that the chief reasons for the success of the Citroen are its small piston displacement (60 by 100 mm.), the fuel economy which results therefrom and the low price of the tires with which this car is equipped.

"On the other hand, taxes are very high in Europe. Thus a Ford must pay for 22 h.p. at the rate of 30 francs per horse power, while the Citroen car pays for only 9 h.p.

"I can predict that you would meet with great success in the large American cities, such as New York, Chicago, Philadelphia, etc., where, in order to make short trips within the city, it is not at all necessary to have a large engine with four or six cylinders.

"Moreover, the trend is toward the small engines and sooner or later American manufacturers will reach the point where they will begin to manufacture small cars. But why not start now while the chances of success are excellent?"

I should be greatly obliged if you would talk about this letter in your interesting magazine and say that Paul E. Cousin is impatiently waiting for offers from an American manufacturer who can deliver an 8-10 h.p. car.

PAUL E. COUSIN,
Buick Distributor, Brussels, Belgium.

Mr. Owen Holds Same View

Editor, AUTOMOTIVE INDUSTRIES:

When I came back from Europe I had quite a lot to say about light cars in Europe. We published several articles in our Commerce Reports and I also presented light cars to the attention of our automotive contacts on occasions when I appeared before them.

In my opinion our manufacturers should not neglect competition which is growing up in foreign markets due to the growth in production and in exports of cars in and from European countries.

Now that England has put a tariff wall around its industries, there is no doubt going to be further development in small car manufacturing there. Germany, as you know, is now discussing a tariff bill which, if enacted, will place the duties in Germany on motor cars many times higher than they were before the war. They expect thereby to be able to protect their industries so that they can be developed. France has a tariff wall and Italy has a tariff wall. All of these countries are not able to absorb the small cars which they can manufacture and they must look to foreign markets.

In 1920 we had a much larger percentage of the world's motor car export business than we had in 1924. To be sure, we shipped more cars in 1924, but the world used more cars. As the world becomes more and more motorized we must pay attention to the percentage. I am rather

inclined to believe that our motor manufacturers have been looking at our individual sales situation and have not paid sufficient attention to the general increase in motor cars used throughout the world. They have been satisfied with an increased business.

Perhaps some day the American manufacturer will produce a differently designed car for the foreign markets which will satisfy them. The design might be altered slightly for home consumption, but until we really recognize that the foreigner has a mind of his own and that we must judge him by his standards and not by our own, I feel that we are overlooking a very interesting step in the development of our foreign trade in motor cars.

Very truly yours,
PERCY OWEN.

Eliminating Wheel Shimmy

Editor, AUTOMOTIVE INDUSTRIES:

I want to call your attention to page 85 of the AUTOMOTIVE INDUSTRIES, July 16, 1925. There is a short description of the effects observed by motion picture work in studying shimmy. In the next to the last paragraph there is the following statement:

"It was found that a pressure of a few ounces was sufficient to eliminate shimmy in its initial stages, but that when the movement had assumed a certain amplitude, nothing could stop it."

The first part of this statement should be mentally underlined by every engineer who is studying front axle problems.

We have heard a great deal about preventive medicine during the past few years, and it has certainly done a great deal for the health of the country. The old proverb, "Prevention is better than cure," is still entirely true.

Therefore, the way to prevent shimmy is not to cure it after it has started, but to damp it out in the initial stage, if it is not possible, as I think is doubtful, to make a front axle usable with front wheel brakes and balloon tires which will be inherently stable and never have any tendency to shimmy.

I am advocating no particular structure, but want to point out that I believe that a small controlled friction or other damping effect applied at the king pin would be vastly more valuable than any form of dash pot, hydraulic control or anything else attached to the tie rod, drag link or steering arm.

JOHN R. CAUTLEY,
Bendix Brake Co.

New Indian Motorcycle Models Are Announced

ANNOUNCEMENT of the 1926 models of Indian Motorcycles show no radical changes in design or equipment but many improvements and refinements which add to riding comfort and serviceability. Prices remain the same for all models except the Scout Model G, which has advanced from $240 to $250 and the Scout Electric from $275 to $285.

Changes in the Prince Model L include complete redesign of frame and gasoline tank so that they now follow the lines of the larger models. A large bucket saddle has been adopted as standard equipment. Balloon tires are optional at slight additional cost. Other changes are: Increased clearance between front fork crown and mud guard; tank capacity increased by one-half; rear chain guard lengthened and curved to follow contour of rear sprocket; battery box equipped with removable top and sides; generator placed higher on frame tube; generator chain longer and more quiet. Price is $185 with $215 for electric.

Improvements in the Scout Model G are: Balloon tires regular equipment; cylinder head flanges 3/16 in. deeper to give more cooling surface; exhaust tube ⅛ in. larger; gas tank reinforced to prevent warping and leaking; ¼ in. longer transmission hand lever shaft; longer and wider handle bars. The Scout retains its old features of two unit electrical system, helical gear drive, unit power plant, double tube truss frame, low saddle position and removable cylinder heads. New prices are $250 and $285 for the electric.

The Indian Chief Model and the Big Chief Model, 61 and 74 cu. in. respectively, have been improved in several ways. A new stretched leather saddle has been placed in a still lower position. Handlebars are longer and dip at the ends. Foot boards have been raised and moved forward to provide a more comfortable riding position. A new double brake design by which pressure on the foot pedal operates simultaneously an external and internal brake furnishes ample braking power for all occasions. The position of the foot brake pedal lug and the foot starter crank has been altered. The generator has been made more accessible and easier to remove and the gasoline tank has been reinforced. Prices are $325 for the Chief and $335 for the Big Chief.

Sidecars are $100, $105 with adjustable axle.

WHEN a driving belt is bent around a pulley the material on the inner surface is compressed while that on the outer surface is stretched. As one of the two pulleys connected by the belt is usually made of as small a diameter as possible, the compression and extension of the surfaces are very considerable, unless the belt is very thin. At the present time trapezoidal or Vee belts are used to quite an extent, and in these the surface layers must be made of specially flexible material in order to ensure a proper life. At the same time the belt as a whole must not be extensible to any extent, as that would cause slipping.

In the Vee belt made by the L. H. Gilmer Co., of Tacony, Philadelphia, the necessary strength is provided by several layers of cords which are located near the neutral axis of the section, at which there is no compression and extension as the belt is curved around the pulley. Each cord is "insulated" by a coating of rubber compound, which tends to reduce the friction between the different cords, for even though the cords are placed near the neutral axis they form a layer of a certain thickness and there is some extension and compression in them, and consequent motion of one cord relative to adjacent ones.

The top and bottom sections of the belt are made of a special rubber compound which is claimed to be both heat and oil-resisting. The bottom and sides of the belt are covered with an impregnated fabric jacket which prevents the harshness which would result from direct contact of the bottom layer of rubber with the metal of the pulley. The fabric jacket also increases the life of the contact surface, which is probably a direct consequence of relieving the grabbing tendency.

Here and There in Foreign Markets

By special arrangement with the Automotive Division, Bureau of Foreign and Domestic Commerce

Rise in Fiat Stock

CONSULAR advices from Italy advise that there is an intense activity there in Fiat shares. "Their rise," say the Automotive Division informants, "was at first interrupted by the news that Great Britain would again impose the McKenna duties on July 1, but the halt was brief and the advance was resumed to high levels equaling those reached last February and provoking feverish speculation in the securities named. It is said that Fiat's production continues to grow; for 1925 it is predicted that total sales will be valued at 1,000,000,000 lire compared with 780,000,000 lire in 1924, with 550,000,000 lire in 1923, and with 435,000,000 lire in 1922. Probable subscribers to the new issue of stock, involved in the increase of capital from 200,000,000 to 400,000,000, will soon be called upon to pay the remaining 30 per cent of the price.

Merger in Czechoslovakia

NEGOTIATIONS are said to be taking place for a merger of the Laurin and Klement Company, one of the largest automobile manufacturing concerns in Czechoslovakia, with the Skoda Works. The proposal has been approved by the respective boards of directors and is now being submitted to the stockholders for ratification. The Skoda Works are at the present time producing Hispano-Suiza Motors, having purchased the Czechoslovak rights from the Spanish Company. In addition to manufacturing Hispano-Suiza automobiles the same motor is being used in the manufacture of airplanes, also a new enterprise for the company. The Laurin and Klement Company, while recognized as one of the leading producers of automobiles in Czechoslovakia, has never been successful financially. The present annual production of pleasure cars and trucks of the company is approximately 2000.

Arabia Seen as New Market

PILGRIMAGES to Mecca in automobiles by the hundreds of thousands is predicted in the near future as a result of the penetration by American automobiles of the interior of the Arabian peninsula. It is stated that this peninsula, which has seldom been crossed by a white man, is one of the least known parts of the world.

Ibu Saud, the leader of the Wahabi who are practically supreme throughout Arabia and who recently purchased three small American cars, is credited with the conquest of the Arabian peninsula. During Ibu Saud's investment of Mecca, it is explained, he sent these three automobiles straight across Arabia from Koweit, on the Persian Gulf, to Jeda, on the Red Sea. It is reported that the trip was made without difficulty and that the route offers no obstacles to future motorists, provided sufficient water is carried. The surface of the desert was found to be good gravel over which fast time could be made, with the exception of one stretch of deep sand about 20 miles long. Through this sand the automobiles had to be drawn by camels. While it would be extremely difficult and dangerous for a white person to make this trip, it is pointed out that the journey above referred to is the entering wedge, and the Arabs will probably purchase more automobiles. Such will not only be useful for the transportation of food and merchandise but specially for the transportation of pilgrims, who will again flock to Mecca by the hundreds of thousands as soon as they regain confidence in the order established there.

Daimler Shows Big Growth

ACCORDING to the *Wirtschaftedienst* of June 26, the Automotive Division of the Department of Commerce announces the development of the automobile industry throughout the world is reflected in a comparison of the Daimler Motor Co. of Germany at the end of 1924 as compared with 1913, showing an increase in capital from 13.5 million marks to 45.6 million marks, making it one of the most important companies in the industry. The Daimler Company in May, 1924, undertook a close communitive interest with Benz & Company for unification of production, plants, purchases, sales, and advertising which is effective until the year 2000. Profits are divided according to a certain quota, sales organization at home and abroad is unified and both firms manufacture the Benz, Daimler and Mercedes types. Quantity production has already been undertaken.

Trade Mark Piracy in Argentina

ATTENTION of automobile manufacturers is called by the Automotive Division of the Department of Commerce to the fact that there have been several cases of trade mark piracy in the Argentina market during the past few weeks. "Manufacturers," says the Division, "are urged to exercise care in investigating as to whether or not a certificate of registration has been granted to any other firm or individual using the parent company's trade name. Unless such steps are taken shipments may be seized by the holder of the mark to the serious embarrassment and loss of the consignee and perhaps of the shippers themselves in case credit has been extended."

Business Good in South China

AMERICAN automobile business in South China for the first six months this year has shown a gain over the same period last year. Disturbed conditions are now restricting normal sales, but if ended shortly the outlook is for increased business during the second six months. The total number of automobiles imported into Hongkong the first five months of this year was 263; from the United States, 151; Great Britain, 55; and France, 3.

Chevrolet Radiator and Headlights Changed; Truck Redesigned

Lights now mounted on tie-rod which also serves as fender brace. One-ton commercial chassis has heavier frame and longer wheelbase. New finish for the open cars.

IN addition to several improvements on the passenger car models following closely the recent price reductions ranging from $40 to $50 on the closed cars, the Chevrolet Motor Company also announces this week a new one-ton general purpose truck chassis.

Changes on the passenger car models are confined to improving the method of mounting the headlights, redesigning and strengthening of the radiator and engine splash pans, the placing of the throttle and spark controls on the dash, new colors on the open models, new upholstery on the large closed cars and several other changes.

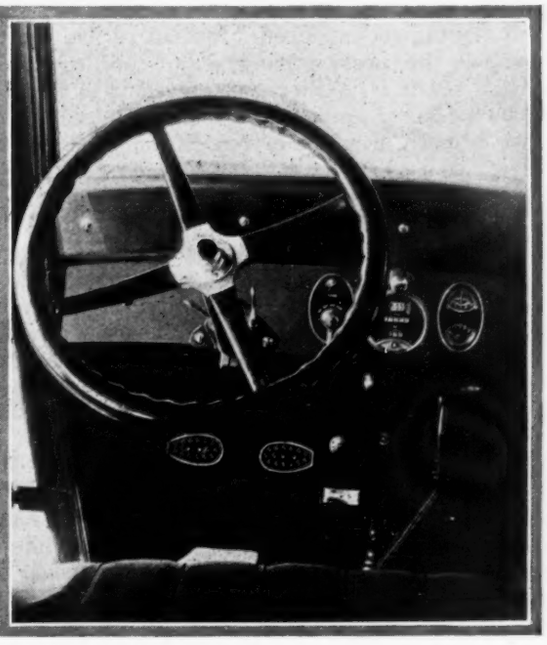
On the new truck chassis which lists at $550 and supercedes the previous Utility Express model, a heavier frame on a longer wheelbase is employed, carrying semi-elliptic springs all round, a half-floating spiral bevel rear axle of entirely new design and large heavy duty tires. The radiator, engine, clutch and transmission are the same as used on the passenger car chassis and incorporate all the changes which were made several months ago when the new Chevrolet models were announced, including the single plate dry disk clutch.

Referring to the car chassis, the latest changes include the carrying of the headlights on a heavy tubular steel tie-rod placed between the front fenders instead of being secured to the fenders themselves as previously. This allows a more rigid mounting, easier adjustment and eliminates the necessity for left and right lights. The arrangement also serves as an additional brace for the fenders and provides a convenient place for carrying the license plate. The headlights are of new construction employing a simpler method of locking the lens rim consisting of a clamping screw at the lowest point of the rim.

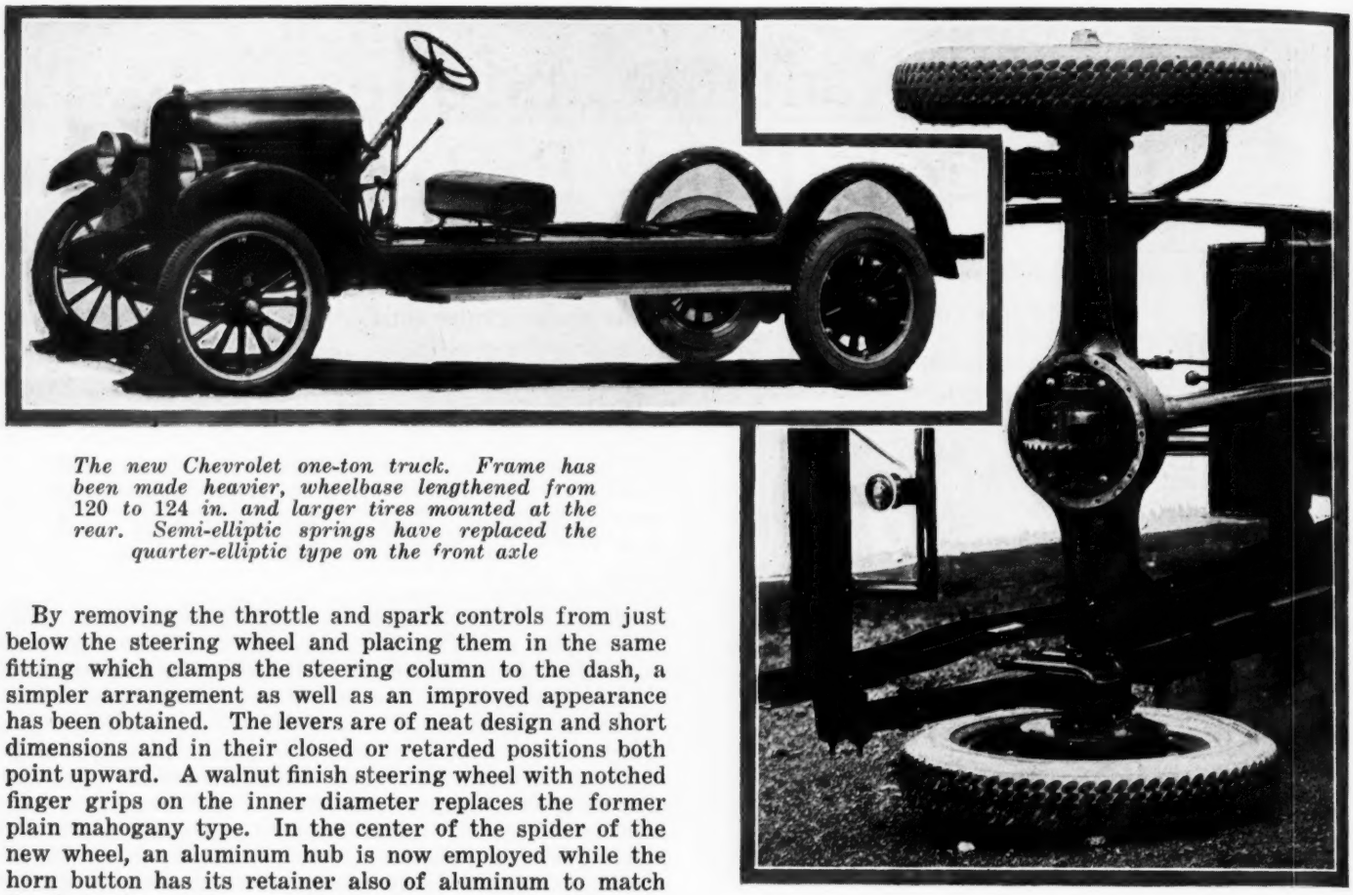
Splasher Is Strengthened

Below the radiator, a slight outward crowning effect is given to the splasher to provide extra stiffness. An interior reinforced plate is now employed between the radiator core and the shell, which, together with the channel brace running from either side of the shell and a heavier, larger diameter tie-rod between the cowl and the radiator, has resulted in a much more rigid mounting. In addition, heavier and stronger hinges are employed on the hood. Besides strengthening and redesigning the engine side pans, the latter are now secured on three sides, only leaving a space of approximately ⅜ in. between the outer edge of the pan and the side of the engine. As the pans are no longer attached to the engine, it is possible now to drop the oil pan without disturbing the side shields, which makes for simpler service operations.

New method of mounting Chevrolet headlights, a tie-rod now being used between the fenders. The radiator has also been redesigned and strengthened



This picture shows how the throttle and spark controls of the Chevrolet are mounted on the same fitting which clamps the steering column to the dash. They were carried formerly just below the wheel



The new Chevrolet one-ton truck. Frame has been made heavier, wheelbase lengthened from 120 to 124 in. and larger tires mounted at the rear. Semi-elliptic springs have replaced the quarter-elliptic type on the front axle

By removing the throttle and spark controls from just below the steering wheel and placing them in the same fitting which clamps the steering column to the dash, a simpler arrangement as well as an improved appearance has been obtained. The levers are of neat design and short dimensions and in their closed or retarded positions both point upward. A walnut finish steering wheel with notched finger grips on the inner diameter replaces the former plain mahogany type. In the center of the spider of the new wheel, an aluminum hub is now employed while the horn button has its retainer also of aluminum to match the hub, the whole assembly having a greatly enhanced appearance. To make for easier shifting of the gears, the change speed lever has been lengthened by 3 in.

Doubtless the most noticable change on the new cars is the finishing of the open models, which is now in Duco gun metal gray. The upholstery is a gray leather fabric to match while the gray inside top lining combines with the upholstery. Also slight changes have been made in the rubber mats. In the closed models a new grade of upholstery is now employed. Instead of flat broadcloth material on the coach, a fine grade of corduroy is used, while on the sedan a superior type of velour to that on the previous models is employed. Finally, in place of the vibrator type of horn, a motor driven Klaxon model H.C. warning device is used.

The Utility Express Truck

Continuing to be known as the Utility Express model, the new one-ton truck chassis is specially designed for general service and can be equipped with a number of bodies strictly developed for the Chevrolet chassis.

As previously indicated, from the radiator back to the universal joint, the units are the same as those employed on the passenger car chassis. In place of the quarter-elliptic springs used on the front axle, 36 in. by 1¾ in. semi-elliptic springs are fitted, while those on the rear axle are of the same type as formerly except that they are 1¾ in. longer. In conjunction with the longer wheelbase, which has been increased from 120 in. to 124 in., the frame has been considerably strengthened by employing a channel section 6 in. deep instead of 5 in. deep as previously.

Particular attention has been paid to the service and maintenance operations in the designing of the semi-floating rear axle. It is so constructed that it is not necessary to unload the chassis when it is desired to overhaul the rear axle, it being possible to withdraw the complete

Semi-floating rear axle on the Chevrolet one-ton truck. Extra large cover plate facilitates service operations

differential carrier in unit with the third member assembly. An extra large cover plate facilitates the operation and allows for easy adjustment and inspection. The housing is of the one piece pressed steel banjo type having large heavy duty New Departure annular bearings all round. Extra heavy spiral cut bevel driving gears provide a ratio of 5.43 to 1 which, together with the ample tire size, allows a high road speed to be maintained. As on the previous model, the service brake is of the external contracting type and acts with the internal expanding emergency brake on 12 in. drums. Both brakes are fitted with self centering and equalizing devices.

Mounted on hickory twelve spoked artillery wheels with steel felloes and demountable rims, the rear tires are of the 30 by 5 in. size while the standard equipment on the front is 30 by 3½ in. For an additional charge of $35, 30 by 5 in. tires with corresponding wheels are offered to replace those on the front axle, the latter being of the same type as used on the car chassis.

Weight of Chassis Increased

On account of the changes, the weight of the chassis with gas, water and oil is now 2030 lb. as compared with 1950 lb. on the previous series. All truck chassis are regularly fitted with the following equipment at no extra charge, generator, starter and electric lights connected to a storage battery; special combination dash and instrument panel equipped with ammeter, oil guage, speedometer and choke control; motor hood, front and rear fenders, running boards with shields running the entire length; license holders, extra rims, tire carrier and complete tool kit. Alemite chassis lubrication system is employed as before.